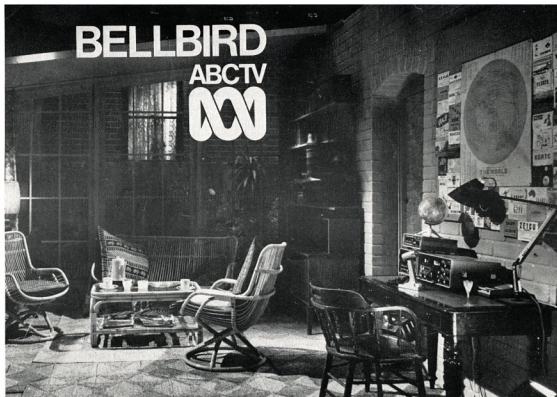


amateur radio

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA



VOL. 46, No. 2

FEBRUARY 1978

CONTENTS

TECHNICAL

- Basic Antennae for Oscar Satellite Communications 18
- Melbourne Amateur 70 cm Band Repeater — VK3RAD 7
- On the Road with the Uniden 2020 8

GENERAL

- A Funny Thing Happened in Bert's Shack the other Morning 13
- Clearing the Air 17
- From Incinerator to In-habitable 11
- Knowing too much for your own good 11
- Remembrance Day Contest Opening Address 20
- The Youth Radio Service in N.S.W. 19
- WIA Correspondence 20

- 1977 Remembrance Day Contest Results 35
- 1977 Western Zone Convention 16

DEPARTMENTS

- Amateur Satellites 26
- Around the Trade 21
- Awards Column 20
- Book Review 37
- C.A.R.E. 31
- Contests 37
- Editor's Desk 6
- Hamads 38
- IARU News 26
- Ionospheric Predictions 21
- LARA 38
- Letters to the Editor 27
- Magazine Index 21

- QSP 3, 6, 31
- Repeaters 26
- Silent Keys 38
- VHF-UHF—an expanding world 30
- WIANEWS 5

COVER PHOTO

Amateur Radio goes SSB on ABC TV national, and came to "Bellbird" after 10 years of transmission. Laurence Slakely — played by Bruce Kerr, portrayed an amateur (VK3BKT) in "Bellbird" during a search for a child calling for help on a radio. Laurence's study and amateur station featured in four episodes. Bellbird production ceased transmission on ABC TV before Christmas.

Photo courtesy Robin VK3BCL

HAM

RADIO SUPPLIERS

323 ELIZABETH STREET, MELBOURNE, VIC., 3000

Phones: 67-7329, 67-4286

Our Disposals Store at 104 HIGHETT ST., RICHMOND (Phone 42-8136) is open Mondays to Fridays, 9.00 a.m. to 5.00 p.m., and on Saturdays to midday.

FM LEAD ANTENNALESS MICROPHONE

MODEL FIRST-101 (Uni-directional Condenser Microphone)

A new professional quality uni-directional condenser microphone featuring superb sensitivity and excellent frequency characteristics. Very easy handling because of cordless microphone. Operates on just one UM-3 battery for 100 hours of continuous use. Very economical. The transmitting frequency freely adjustable within FM radio band. If using without lead antenna, sound is caught within about 50 metres, when using with reinforced antenna to jack at the bottom, range is extended up to about 100 metres.

Accessories: Battery UM-3, Wind screen, Ad using screwdriver, reinforced antenna line, microphone stand.

NETT PRICE \$33.90
Postage \$1.40

MODEL YW1 STANDING WAVE BRIDGE, FIELD STRENGTH AND POWER INDICATOR

YW-1 is a handy, compact device for the amateur radio station in checking transmitters operation. For measurements, it uses the bridge method of comparing the power supplied to and reflected from the antenna system. Continuous monitoring of the transmitter output is possible by having the instrument in the circuit at all times. The model can be used as a simple field strength meter by disconnecting it from the feedline and attaching a small pickup antenna.

Meter Sensitivity: 200 uA on DC current (at full scale); **VSWR Meter Range:** 1 : 1 — 1 : 3; **Power Meter Range:** 0 — 10W; **Impedance:** 50; **FS Meter Range:** 0 — 10 dB; **Accuracy:** 1.5 kHz — 50 MHz 10 per cent; **Dimensions:** 5 1/2 (h) x 2-3/8 (w) x 3 (d) in.; **Weight:** 16.58 ozs.

NETT PRICE \$22.00
Postage \$1.50

BULK STORE DISPOSALS

AT 104 HIGHETT STREET
RICHMOND, 3121
Phone (03) 42-8136

NEW AWA-THORN TV TUNERS

Type ENR5758, fitted with 6GK5 and 6G57 valves.

\$2 each plus P&P

NEW MAGNAVOX 53TS SPEAKERS

5" x 3" 8ohm, ideal for small extension speaker for communications equipment.

\$1.95 each plus P&P

CAPACITORS

Variable Beehive Philips Type 25 pF, real value at

15c each or 10 for \$1

VARIABLE BUTTERFLY CONDENSERS

with screw driver adjustment, available in 9-17 and 25 pF. While they last at

\$2 each plus P&P

EDGE METERS

0-1 mA movement calibrated, 0-5 ounces. Brand new in boxes.

\$3 each plus P&P

LARGE VARIETY OF MULTI-CORE SHIELDED CABLE

All extremely high quality.

- | | | |
|--|-------|----------|
| 2 CORE SHIELDED | | 30c yard |
| 4 CORE SHIELDED | | 40c yard |
| 6 CORE SHIELD, ideal for rotators 45c yard | | |
- Please add pack and post for above cable when ordering.

We also have a large range of **ELECTRONIC DISPOSALS EQUIPMENT**, including TRANSFORMERS, CABLE, TEST EQUIPMENT, TRANSISTERS, METERS, etc.

You are invited to call in and inspect. **NO PARKING PROBLEMS** A 104 HIGHETT STREET RICHMOND. Phone 42 8136.

WE STOCK CB GEAR AS WELL AT VERY COMPETITIVE PRICES, INCLUDING ANTENNAS AND ACCESSORIES.

YAESU FRG-7

THE RADIO FOR WORLD-WIDE LISTENING AT ITS BEST — 0.5-29.9 MHz COVERAGE SYNTHESIZED COMMUNICATION RECEIVER



The model FRG-7 is a precision built high performance communication receiver designed to cover the band from 0.5-29.9 MHz. Its state of the art technology offers an unprecedented level of versatility. The Wadway Loop System (drift cancellation circuit) coupled with a triple conversion super heterodyne system guarantees an extremely high sensitivity and excellent stability. It provides complete satisfaction to amateurs as well as BCLs with superb performance and many features such as RF attenuator, selectable tone, and automatic noise suppression circuit.

\$338

E.E.I. SOLID STATE CAR RADIO

MW BAND PUSH-BUTTON TUNING
SPECIFICATIONS:
Power Supply: 12 V DC
Receiving Frequency: MW 520KC (580M) — 1640KC (163M)
Intermediate Frequency: 455KC
Audio Output: 4.5W
Transistors: 8, diode 4
Speakers: 5" Permanent Dynamic 4 ohm
Sensitivity: Less than 20 uV at 20 N/S
Selectivity: More than 25 dB at +10 kHz detuning
A.G.C.: More than 45 dB at 1,000 kHz
IF Rejection: More than 40 dB at 600 kHz
IM Rejection: More than 50 dB at 1,400 kHz
Cabinet Dimensions: 1-7/8" (H) x 6-1/8" (W) x 4-1/8" (D)

\$32.90 — Free Post

MODEL OL64 D/P MULTIMETER

Very ruggedly constructed this model is particularly suitable for workshops. It features special scales for measurement of capacitance and inductance. Diode protected movement.

Specifications: 20,000 ohm/volt DC, 8,000 ohm/volt AC, DC volts — 0.25; 1; 2.5V; 10; 50; 250; 1,000; 5,000, AC volts — 10; 50; 250; 1,000, DC amps: 50 uA; 1 mA; 50 mA; 500 mA; 10 A, Ohms — 4 K ohm; 400 K ohm; 4 M ohm; 40 M ohm, Centre scale — 40 ohm; 4,000 ohm; 40,000 ohm; 400,000 ohm, Decibel: —20 to +62 dB, Dimensions: 6" x 4-1/2" x 2"; 152 x 107 x 51 mm, Inductance — 0/5000H, Carrying case available, Model C \$6.50.

\$32.50 Postage \$2.20



E.E.I. PORTABLE RADIO

AM/AIR VHF SPECIFICATIONS:
Freq. Range: AM/30-1600 kHz, AIR (VHF) 108-174 MHz, Intermed. Freq.: 455 kHz, FM 10.7 MHz, Output: 450 mW max, Speaker: 2 1/2" permanent-magnetic dynamic type, 8 ohm, Power Source: DC 6V (4 x UM3 Penlite) or equivalent, Semiconductor: 10 trans, 7 diode, Dimensions: 8 1/2" (W) x 4 1/2" (H) x 1-7/8" (D)

\$18.90 — Postage \$1.40

MODEL AS100 D/P MULTIMETER

This meter features double zero diode meter protection and 3 1/2" full view easy to read 2 scale scale, it is fitted with polarity reversing switch and housed in a strong moulded case with carrying handle.

SPECIFICATION: 1000,000 ohm/volt DC, 10,000 ohm/volt AC, DC Volts: 0.3, 3, 12, 60, 120, 300, 600, 1,200, AC Volts: 6, 30, 120, 300, 600, 1,200, DC Amps: 12 uA, 60 uA, 600 uA, 300 mA, 12A, Ohms: 2K, 20K, 200K, 2M, 20,000 ohm, Centre Scale: 20 ohm, 2,000 ohm, 20,000 ohm, 200,000 ohm, Decibel —20 to +57 dB, Dimensions: 7-3/5 x 5-2/5 x 3-2/5 in. Carrying case for model 1 — \$7.90.

Price: \$52.50 — Postage \$2.20.

MAIL ORDERS WELCOMED. Please allow pack and post on items listed on this page. If further information required send a stamped SAE for immediate reply from the above address. Larger items can be sent F.O.B. Due to circumstances beyond our control, prices quoted in this advertisement are subject to alteration without notice.



amateur radio

Published monthly as its official journal by the
Wireless Institute of Australia, founded
1910.

FEBRUARY 1978

Vol. 46, No. 2

PRICE: 90 CENTS

(Sent free and post paid to all members)

Registered Office:

2/517 Toorak Road,
Toorak, Victoria, 3142.

Registered at the G.P.O. Melbourne for trans-
mission by Post as a Periodical — Cat-
egory "B".

EDITOR:

BRUCE BATHOLDS* VK3JUV

ASSISTANT EDITORS:

RON COOK* VK3JFW
GIL SONES* VK3AUI

TECHNICAL EDITORS:

BILL RICE* VK3ABP
KEN PALLISER VK3GJ

CONTRIBUTING EDITORS:

BOB ARNOLD VK3ZBB
BRIAN AUSTIN VK5CA
ROD CHAMNESS VK3UG
SYD CLARK* VK3ASC
RON FISHER* VK3OM
DAVID HULL VK3ZDH
ERIC JAMIESON VK5LP
PETER MILL VK3ZPP
KEVIN PHILLIPS VK3AUQ
LEN POYNTER* VK3GP

DRAFTING:

ALL DISTRICTS DRAUGHTING SERVICE
KEN GILLESPIE* VK3GK

PHOTOGRAPHER:

REG GOUDGE —

BUSINESS MANAGER:

PEIER DODD VK3CIF

ADVERTISING REPRESENTATIVE:

DAVID COOK

***Member of Publications Committee**

Enquiries and material to:

The Editor,
PO Box 2611W, GPO Melb., 3001

Copy is required by the third of each month.
Acknowledgement may not be made unless
speciality requested. All important items
should be sent by certified mail. The Editor
reserves the right to edit all material, in-
cluding Letters to the Editor and Hamads,
and reserves the right to refuse acceptance
of any material, without specifying a reason.

Advertising: Material should be sent direct
to P.O. Box 150, Toorak, Vic., 3142, by the
25th of the second month preceding publica-
tion. Phone: (03) 24 8652.—Hamads should
be sent direct to P.O. Box 150, Toorak, Vic.,
3142, by the 3rd of the month preceding
publication.

Trade Practices Act: It is impossible for us
to ensure that advertisements submitted for
publication comply with the Trade Practices
Act 1974. Therefore advertisers and adver-
tising agents should appreciate the absolute
need for themselves to ensure that the pro-
visions of the Act are complied with strictly.
Readers are reminded that when buying, ob-
taining or receiving goods from overseas in-
cluding goods listed in advertisements by
overseas organisations in this Journal, cus-
toms import duties and Sales Tax may be
levied on the goods at the time of importation.
These amounts, if any, are payable by the
buyer. The purchaser should ensure that the
seller has made specific reference to this
effect in his quotation to the buyer or unless
other prior arrangements are in force between
the buyer and the seller.

Printers: EQUITY PRESS PTY. LTD.

50-52 Islington Street, Collingwood, 3066
Tel.: 41-5054, 41-5055

QSP —

MEMBERSHIP IS YOUR ALLY

This is the time of year when an indication can be had of our financial strength for the coming year.

The response to subscription payments has been well up to standard.

Thank you on behalf of amateur radio, the Institute, and of all your fellow members.

All of us on the Executive are appreciative. Not for ourselves, since we are no more than your servants
to safeguard the future of your hobby along with all our friends overseas.

We, that is you and I, face formidable forces to preserve our leisure activity. Not only at WARC 79
but against the gathering strength of other activities.

This Institute is the mouth-piece of amateur radio in Australia. To be of greatest usefulness it has
to be strong. That strength is primarily in numbers, secondarily in unity and self discipline under the
most provocative circumstances.

If amateur radio is to continue as the worthwhile leisure activity of civilised people your support and
assistance are essential through thick and thin.

If you do not believe me, keep this to be read in ten years' time.

D. A. WARDLAW VK3ADW
Federal President.

WIRELESS INSTITUTE OF AUSTRALIA

Federal President: Dr. D. A. Wardlaw VK3ADW

Federal Council:

VK1 Brig. R. K. Roseblade VK1QJ
VK2 Mr. T. I. Mills VK2ZTM
VK3 Mr. J. Payne VK3AED
VK4 Mr. N. F. Wilson VK4NP
VK5 Mr. I. J. Hunt VK5GX
VK6 Mr. N. R. Penfold VK6NE
VK7 Mr. P. D. Frith VK7PF

Staff: Mr. P. B. Dodd VK3CIF, Secretary.

Part-time: Col. C. W. Perry, Mrs. J. M. Seddon and
Mr. T. Cook (AR advertising).

Executive Office: P.O. Box 150, Toorak, Vic., 3142.
2/517 Toorak Rd., Toorak, Ph. (03) 24 8652.

Divisional information (all broadcasts are on Sun-
days unless otherwise stated):

ACT:

President — Mr. E. W. Howell VK1TH
Secretary — Mr. J. Farquharson VK1ZDF
Broadcasts — 3570 kHz & 146.5 MHz: 10.00Z.

NSW:

President — Mr. T. I. Mills VK2ZTM
Secretary — Mr. I. A. Mackenzie VK2ZIM
Broadcasts — 1825, 3595, 7146 kHz, 28.5, 52.1,
52.525, 144.1, Ch. 8 and other relay
stations: 01.00Z. (Also Sunday even-
ings 09.30Z and Hunter Branch,
Mondays 09.30Z on 3570 kHz and ch.
3 and 6).

VIC:

President — Mr. S. T. Clark VK3ASC
Secretary — Mr. J. A. Adcock VK3ACA
Broadcasts — 1825, 3500, 7135 kHz — also on 6m,
2m SSB and 2m Ch. 2 repeater: 00.30Z
(Also on Radio 3HA).

QLD:

President — Mr. D. T. Laurie VK4DT
Secretary — Mr. P. Brown VK4PJ
Broadcasts — 1825, 3580, 7146, 1432 kHz: 09.00
EST.

SA:

President — Mr. C. J. Hurst VK5HI
Secretary — Mr. C. M. Pearson VK5PE
Broadcasts — 1820, 3550, 7125, 14175 kHz; 28.5
and 53.1 MHz, 2m (Ch. 8): 09.00
S.A.T.

WA:

President — Mr. R. Greenaway VK6DA
Secretary — Mr. N. R. Penfold VK6NE
Broadcasts — 3600, 7080, 14100, 14175 kHz, 52.565
and 2m (Ch. 2): 01.30Z.

TAS:

President — Mr. R. K. Emmett VK7KK
Secretary — Mr. H. E. Hewens VK7HE
Broadcasts — 3570, 7130 kHz: 09.30 EST.

NT:

President — Mr. Doug Haig VK8JD.
Secretary — Mr. Henry Anderson VK8HA.
Broadcasts — Relay of VK5HI on 3.55 MHz and on
146.5 MHz at 2330Z. Slow morse
transmission by VK8HA on 3.555 MHz
at 1000Z almost every day.

Postal information:

VK1 — P.O. Box 1173, Canberra, 2601
VK2 — 14 Atchison St., Crows Nest, 2065 (Ph. (02)
43 5795 Tues & Thurs (10.00-14.00)).
VK3 — 412 Brunswick St., Fitzroy, 3065 (Ph. (03)
41 3535 Sat 10.00-12.00h).
VK4 — G.P.O. Box 638, Brisbane, 4001.
VK5 — G.P.O. Box 1234, Adelaide, 5001 — HQ at
West Thaburnton Rd., Thaburnton (Ph. (08)
254 7442).
VK6 — G.P.O. Box N1002, Perth, 6001.
VK7 — P.O. Box 1010, Launceston, 7250.
VK8 — (incl. with VK5), Darwin AR Club, P.O. Box
1418, Darwin, 5794.

Slow morse transmissions — most week-day even-
ings about 09.30Z onwards around 3550 kHz.

YAESU



FT-101E

FT101E HF transceiver 160m thru 10m
FL2100B HF linear amplifier
FRG 7 Receiver
FT301D HF solid state transceiver

\$859
\$978
\$338
\$1149

KENWOOD



KENWOOD TS-520S HF transceiver

TS520S HF digital transceiver
TS520S HF 160-10m transceiver
VFO320 vfo for TS520S
TV502 2m transceiver
TV506 6m transceiver
TR7400 2m fm digital transceiver
KC500 desk mic. dynamic

\$1105
\$705
\$119
\$260
\$229
\$450
\$54

MORSE KEYS

HK702 deluxe, marble base
HK708 economy model
HK706 operator's model
MK701 manipulator
K2103H electronic keyer

\$35
\$19
\$20
\$38
\$158

MICROPHONES

VM-1 pt lowZ, noise-cancelling
VM-2 base with preamp, low Z

\$8.90
\$29.80

L.P. FILTERS

FD30M 32MHz cut-off, 1KWpp max
FD50L 32MHz cut-off, 200w max

\$35
\$20

ROTATORS

ART3000C heavy duty with control box
ART3000 super heavy duty
AR22XL light duty for small beams

\$198
\$478
\$109

NOISE BRIDGES

TE7-01 Omega, up to 100MHz
TE7-02 Omega, up to 30MHz

\$40
\$55

BALUNS

AS-BL (Ashbi) for beams
B5N4 (Nyctan) for beams
BL50A (Rak) 50 ohm, 4Kw, dipole
BL70A (Rak) 70 ohm, 4Kw, dipole

\$31
\$30
\$25
\$26

couplers

CLAS 500w, 2.5 thru 20MHz
CLAS 200w, 2 metres
CSW216 isol var/pwr meter, 3.5-28MHz

\$134
\$61
\$219



\$849 uniden

The fabulous Uniden 2020 phase-locked-loop transceiver offers separate sub-harmonic 4-pole crystal filters in standard and 4440Hz in the final with screen voltage stabilization for maximum distortion products. Features plug-in pcb's and even the front panel can be swung out for easy servicing. A full spares catalogue is available together with change-over pcb's. Compare the Uniden 2020 with other HF transceivers and you'll be quickly convinced that it offers the best value!

SPEECH PROCESSORS

RC330 audio mix compressor, h-fs
RF350 rf speech processor
RF440 rf speech processor

\$71
\$112
\$149

ATLAS

ATLAS 350XL s/f state base stn.
ATLAS 350PS matching AC supply s 285
ATLAS 210X 80 thru 10m
ATLAS 215X 160 thru 15m

\$1199
\$ 285
\$ 969
\$ 969

RECEIVER



The NRD-505 professional receiver covers 100KHz thru 30MHz with digital display, CMOS memory, high stability, all-mode operation. Price \$2499.

WARNING: The law requires that a licence be held for all transmitting equipment. Purchasers may be asked to provide evidence that he/she is the holder of an appropriate certificate of proficiency.

Prices and specifications subject to change without notice.

Direction: Russell J. Kelly
Peter D. Williams

HELLO 6M DX

Sunspot cycle #21 is now on the up-and-up! Share in some of the fun on 6 metres DX with the ICOM IC502 ssb portable transceiver. The IC502 covers 52-53MHz with VFO control, RTT, effective noise blanker, provision for external power and antenna and comes complete with carrystrap, mic and English handbook. Backed by VICON 90 day warranty. Price \$219



IDEAL FOR SATELLITE WORKING

The IC202 is the ideal 2m exciter for those long-haul DX contacts or to work oscar. 3watts ssb and cw, VFO control, quality manufacture and comes complete with manual, carry-strap, mic and VICON 90 day warranty. Price \$219



ICOM IC-215 2m FM transceiver \$219

- 2 meter FM • 3 WPEP • 15 channels, 12 by selector, 3 by function switch
- Dual power level, 3 W HI for long distance, 0.5 W LOW for local • Dial illumination for night use • Power pilot lamp • Frequency range: 146 to 148 MHz.

ACCESSORIES FOR THE PORTABLES

- BC-20 nicad pack and reg. \$57
- Rubber Duckey 2m antennas \$13
- Mobile mounting bracket \$18
- IC3PS matching power supply \$115
- IC20L 2m linear, 10w out \$98
- IC50L 2m linear, 10w out \$90

Sunspot cycle 21 coming up....

PORTABLES

ICOM'S DIGITAL ALL SOLID STATE HF TRANSCEIVER

RANGER

Antennas!

You know you can count on



TH6DXK 6el 10/15/20m Thunderbird \$320
TH3MK3 3el tribander 8dB gain \$249
TH3XJ 3el tribander, 12" boom \$199

TRAP VERTICALS

V33r 6.7m high, 80 thru 10m, no guys \$109
V42r 4.25m high, 40 thru 10m, no guys \$89

TRAP DIPOLES

M3dyVN 80 thru 10m \$87
AL46DXN 40 & 80 metres, 2Kw \$54

TWO METRES

ringo \$49

The RINGO RANGER ARX-2 is a 2M gain omni-directional antenna with three half-waves in phase and a one-eight wave matching stub. The Ringo Ranger gives an extremely low angle of radiation for better signal coverage. It is tunable over a broad frequency range and perfectly matched to 52 ohm coax. Price \$49.

4dB gain with reference to half-wave dipole.
6dB gain with reference to quarter-wave whip.



Price \$279

ICOM IC-22S FM transceiver



IC-211 4 MEG, MULTI-MODE

ICOM IC211 2m fm transceiver
The new IC211 from VICON is the last word in digital 2m, all-mode transceivers. Fully synthesised in 100Hz or 5KHz steps, has dual tracking, optically coupled VFOs with 7 digit LED readout. One knob controls all frequencies. Modes fm, vhf, ssb, cw. Internal 240vac and 13.8vdc power supply. Comes complete with VICON 90 day warranty. List price \$785 plus freight and insurance.

THE WORLD LEADERS IN VHF NOW BRING YOU THE ULTIMATE

- All Solid State, even the finals.
- 100% Continuous Duty on All Bands, All Modes.
- All Bands 1.8 - 30MHz.
- USB, LSB CW, CW (No Noise), RTTY.
- Double Balanced Schottky Diode Mixer used in both receive/transmit.
- Dual built in individual Digital VFO's offer split frequency operation.
- ICOM's unique Push Range Tune.
- VFO, Sense Break in CW, RTT, AGC, Noise Blanker.
- Built in Speech Processor.
- Full Metering.
- Extremely compact.
- Digital readout and all filters built in.
- Built in DC power supply.
- Optional AC power supply/charger.
- Full line of accessories to choose.



IC701 TRANSCEIVER \$1160 IC701PS optional AC supply \$239

Head Office and Mail Orders:
139 AUBURN ROAD, AUBURN, Vic.
Telephone: (03) 82.5398, (03) 813.2355
TLX 30566
Adelaide: 43.7981 Brisbane: 38 4480
Canberra: 82.3581 Gold Coast: 32.2644
Perth: 446.3232

VICON

WIANEWS

INSERTS

Possibly the impending holiday season may have taken the minds of contractors off their work. Anyway, things occurred which were outside the control of the Institute and which only came to light too late for corrective actions to be taken.

In December AR you received only one of the two printed pages from the Executive — the one with the petition. After that issue had been mailed you can imagine the comments when the mailing service returned the entire stock of the second leaflet with the overs; in the unopened packages still carefully marked leaflet "A". This leaflet finally was included with the January issue of AR.

At about the same time complaints came in from Melbourne that they received a VK2 insert with their AR. Fortunately the stencil for this insert was still on hand so another run was produced for insertion into the January issue for NSW members.

Yes, quotes from other mailing services are being sought.

EDP

The subscription notices were produced from the computer file early in December.

Not only did this run use up the entire stock of subscriptions stationery because of a programme omission dating back to last April, but also the run was accidentally made on last year's subs. rates. The file has now been properly up-dated but where there were increases in rates the relative subs. notices had to be altered by hand.

Having completed these 2000 odd alterations, believe it or not, it was discovered that some small isolated batches of Final Notices had been sorted into the ordinary sets. By this time most of the notices had already been posted. Fortunately the quantities were small but annoying to the recipients, "How come I get a Final Notice without even receiving any earlier notice?" The fact that the trimmed notices received from the computer centre were trimmed too large to fit the envelopes (sample supplied of course) also did nothing to facilitate quick handling — a friendly local printer guillotined them so size.

Never a dull moment, but apologies though these things happened through no fault of your office.

Sadly other things like the power strike and an AR staplers' unscheduled close down between Christmas and New Year caused delays in processing ARs.

EXAMS AND EDUCATION

No representative from the Radio Frequency Management Branch attended the Federal Education Co-ordinator's meeting on 7th December in Melbourne for interstate and local WIA experts. Sickness and pre-occupation with a State Radio Superintendents' testing on the same day were given for the omission.

Nevertheless the Co-ordinators' meeting produced a number of useful recommendations considered and discussed by Executive at the December meeting. Members will have noted the submissions made to the P. and T. Department as published in September AR.

One evening very late in December, Peter Wolfenden, the Executive Vice-Chairman, was entertained by Kaklum Lumenta YBOBY, on the latter's return to Jakarta from a short holiday in Adelaide. Kaklum is a Vice-President of the Indonesian amateur society ORARI and described in detail how their society organises, sets, holds and marks examinations on behalf of their licensing authority. Much more elaborate and in greater depth than occurs in the USA for their Novice level.

RON WILKINSON ACHIEVEMENT AWARD

The Executive Sub-Committee's recommendations were accepted by Executive and subsequently were found satisfactory by Mrs. Wilkinson herself. Details were circulated to Divisions. If no further suggestions come forward the full details will appear in March AR. Also to be announced will be the names of the 1977 recipients. This award should excite the interest of anyone wanting to achieve something in his chosen hobby of amateur radio.

SCALAR

for Decibel Products

HIGH PERFORMANCE DIPLEXERS,
CAVITY RESONATORS, CIRCULATORS,
ISOLATORS, MOBILE DIPLEXERS,
TRANSMITTER COMBINERS,
NOTCH FILTERS.



THE DB-4022 UHF BANDPASS REJECT FILTER

- ★ Bandpass Characteristics ★ Reject Characteristics
- ★ Low Insertion Loss ★ Field Tunable

On the DB-4022, a special notch circuit enhances the bandpass cavity rejection characteristics to provide additional isolation at a frequency — 3 MHz or more from the pass frequency. When the cavity is between the antenna and transmitter, this additional isolation can provide protection to a receiver from transmitter noise and intermod generated by the transmitter. When the cavity is installed between the antenna and receiver, the additional isolation can reduce interference from nearby transmitters as well as offer additional protection for receiver intermod.



SCALAR
Distributors Pty Ltd

VICTORIA: 18 Shelley Ave., Kilsyth, Vic., 3137. Ph: 725 9677
Cables: WELKIN, MELBOURNE. Telex: AA34341.

Qld.: 969 Ann Street, Fortitude Valley 4006
Telephone (07) 52 2594. Telex AA 43007 WELKI.

WARC 79

Yes, WARC 79 is now next year with basic preparations by Governments to be ready for CCIR discussions later this year. The Federal President and Michael Owen VK3KI, one of the IARU R3 Directors, held discussions with NZART officers late during November in New Zealand.

WIA LOGO, POSTERS, STICKERS

Work is continuing on the production of a suitable logo or badge for modern day use. This would not necessarily replace the existing badge, as this is a matter for decision by Federal

Council. Meantime some draft posters have been viewed but cannot be finalised yet. The intention is to produce sets of publicity material for use in show stands or displays. If any member believes he can produce designs please send them in to Toorak — much help is needed on this project.

1978 FEDERAL CONVENTION

A reminder that agenda items for this year's Federal Convention are required to be received during March. If any member has anything to put forward, please submit it now direct to your Division without delay.

QSP

IMPROVE YOUR STATUS

"Never say or write 73 (best regards); always say 73's (bestes regards).
Never say 88 (love and kisses); always say 88's (loves and kisses).

Never say "I" referring to yourself; always use the Imperial "We". Someone may come back to you addressing you as Your Majesty — just think how this would puff your ego.

Always call your wife "the XYL"; that let's the world know you regard her as no longer young and no longer a lady.

Adapted from CORA August 1977. And fail not to end a CSQ with "lover and old didadidadi 10-37 good buddy".

NEW MEMBERS SUBSCRIPTIONS

When you first join as a new member you normally pay the appropriate subscription for one year. Thus, if you join (in actuality when your AR begins) for July AR your subscription takes you through to June of the next year inclusive. In that next year you will receive a subscription notice only for the amount required to render you financial through to 31st December of that year. Thereafter your subscription year will run from January to December each year. An impending change in WIA EDP programmes may alter this however as it is hoped to adopt anniversary or cyclic billing for new members. Further details will be published later.

VISIT TO NEW ZEALAND

On November 25th to 27th the Federal President — David Wardlaw VK3ADW — accompanied by IARU Region 3 director Michael Owen VK3KI visited Wellington, New Zealand, to confer with officials of the NZART.

Attending were Arthur Godfrey ZL1HV, President of the NZART, Tom Clarkson ZL2AZ, a director of IARU Region 3, Doug Gorman ZL2IY, Post Office Liaison for NZART, Fred Johnson ZL2AMJ, who assists Tom Clarkson on IARU business, Gerry Kilpatrick ZL1BBS, and Jim Maschen ZL2BHF, Councilors.

Naturally, the most important subject discussed was the preparation for WARC 79.

To date the general preparation in New Zealand for WARC 79 is not quite as advanced as in Australia. It is pleasing to note that the NZART is well involved in the work.

The hope was expressed by the NZART that they will be able to have a member on the New Zealand delegation. Steps are being taken to provide finance.

The opportunity was taken to discuss IARU matters in relation to both the regional and overall organisations.

Also many points on common domestic issues were discussed. Examinations, regulations, legislation, CB, pirates, etc.

Many of the problems which we think are peculiar to Australia are also common on the other side of the Tasman.

In these areas, much useful information was gleaned and will be applied in the Australian context.

The visit was certainly not before time and will help to provide much closer liaison between the NZART and the WIA, a necessity in the critical days leading up to WARC 79.

de VK3ADW

160 METRE MOBILE RALLY

Visitors to the Bendigo Convention on the morning of 26th February will be looking for 160 metre band contacts. If you can work on this band any who come on the air and give the travellers a point or two to add to the score.

de VK3YQ

COMMUNICATIONS SATELLITES

According to Telecommunications Journal Aug. '77 the latest Intelsat TV satellite launched on 26th May carries 6250 two-way telephone circuits and two television channels in the frequency segment 3700-4200 MHz with a power of 20W. The apogee is given as 35755 km in geostationary orbit. The orbital mass was shown as 825 kg.

STOLEN

The following equipment has been stolen: IC215 S/N 7203417. Please report any information to your nearest police station or Vicom International Pty. Limited.

ILLEGAL VHF OPERATIONS IN MAITLAND

Licensed amateurs operating in the near Newcastle area of Maitland should be on the lookout for pirate operations on Ch. 40. The callings being

used illegally are VK2YBC, VK2ZJY and VK2ZQF. They generally choose local WIA BC times on Monday evenings to try out their toys.

From Westlakes R.C. Newsletter, December, 1977.

RFI

"Extensive electronic controls used in 1977 autos are causing RFI problems — a recent Illinois Bell notice warned that the 'cruise control' in 1977 Cadillac (and presumably other GM cars) is sensitive to strong RF fields, which could cause sudden speed up or slow down. Some electronic shift control braking systems have locked up from RFI, and complete engine failure in fuel-injected engines has been reported by two-metre users." Ham Radio August 1977.

EDITOR'S DESK

By Bruce Bathols VK3UV

The December 1977 issue of Amateur Radio has received acclaim from many areas and the Publications Committee is pleased with the final result.

Circumstances beyond our control contributed to the lateness of delivery and we regret any inconvenience which may have been caused to our members.

Amateur Radio — Australia's Window on the World, is designed for the information of newcomers, and for the first time in many years, this issue has been made available for sale to the general public through technical book sellers and other retail outlets. Copies of this issue are still available from the WIA, and we request those who would like an additional copy to forward \$1.35 plus 40c postage to P.O. Box 150, Toorak, Vic. 3142, to secure same.

Limited bulk supplies are available to clubs, divisions, traders, etc. at special discount rates, and we suggest that initial contact be made with the Federal Secretary, Mr. Dodd, at the above address for bulk supply information.

In our efforts to continually present the current happenings of our hobby to our diverse membership, we strive to publish articles and items of general interest which we consider to have wide appeal. To assist in this regard, it is necessary to collect a backlog of suitable material, and in our case we require material prepared in advance for at least 3 months.

We are always on the look-out for technical articles especially, and photographs — lots of them — to brighten up the pages and the front cover.

Technical articles do take several months to prepare, technical editing, drafting of diagrams, ability to 'slot them in' at a suitable time, sometimes re-writing, all contribute to publication delays — but please don't be put off — keep them rolling in.

At the present time, we are in a very fortunate position in having sufficient technical articles in various stages of preparation to last approx. six months — but more are required.

We have been disappointed in the response to our appeals to divisions via executive notes for a supply of photographs of suitable items of interest.

Have Australian amateurs forgotten how to use a camera? How about dusting off the lens fellers and girls, loading up with some film and start looking around for interesting items such as unusual antennas, shacks, mobile installations, maritime and aero mobile, outdoor amateur scenery, hamfests, community displays, emergencies, etc. etc. — the list can go on and on with a little imagination. — Please don't forget captions and perhaps a short story.

Amateur Radio magazine can only be made interesting if our members help us to make it so.

Please let us have your submissions in the near future — act now before you forget.

MELBOURNE AMATEUR 70 cm BAND REPEATER — VK3RAD

Don Sinclair VK3VH
6 Tintern Ave., Springvale South
Glen Percy VK3ZQP
Cotswold Ave., Springvale South

It is a well known fact that Amateur Radio operators are compulsive experimenters, always trying new methods, new components and new techniques in a never ending quest for knowledge and ventures into new fields. It was this experimenting spirit and venture onto the 70cm band that brought about the birth of VK3RAD and this article.

In 1972 an experimental repeater, VK3WIA-R/5, was set up on Mt. Martha by the Australis Group as an aid to the intended Amateur Satellite Programme. This repeater uses Channel A (2M) 145.854 MHz in and 145.715 MHz out in the 70 cm band.

Quite a few amateurs worked through or could listen to this repeater and got the 70 cm bug. That repeater has not been active for many years now, but the amateurs who remembered it went on to establish a net frequency on 435.00 MHz and operated consistently on the frequency until the latter part of 1975. By this time approximately a dozen amateurs using the frequency formed a group and had regular meetings at each others' QTH to discuss the news, new equipment, antennae, etc. At one of these meetings it was suggested the group apply for a permit for an "experimental" repeater in the 70 cm band.

A letter was drafted and sent to the Telecom Radio Branch in April 1976. After a lengthy period and exchange of information a licence was granted for a repeater. The proposed equipment was accepted as it would comply with the technical specifications pertaining to the licence. The repeater was to be located at the QTH of

VK3YEO as aerials were already available and access to the repeater was at all times restricted to the licensee. The frequencies selected were 433.525 MHz in and 438.525 MHz out, which complied with the WIA band plan, and are the primary frequencies in the 70 cm band for repeaters. The repeater was to have FSK identification and would incorporate a two minute timer. The call sign issued was VK3RAD. The power delivered to the antenna was not to exceed 25 watts.

At this point an elated group of amateurs proceeded to set up and test the equipment which had — apart from the main repeater unit — been designed and built by members of the group. The main repeater unit was designed around a PYE WESTMINSTER UHF mobile unit and initially ran barefoot, delivering 4 watts. The antenna for the transmitter was a five element co-linear, and for the receiver a UHF ringo was pressed into service. The system worked reasonably well but left much to be desired from a mobile situation. The problem showed two deficiencies in need of attention — more power output and better ears — and/or better antenna systems. An RF amplifier was constructed for the receiver incorporating a 3N210 MOSFET. Also an RF amplifier for the transmitter which delivered 16 watts for the 4 watts from the unit itself was forthcoming, once again designed and constructed by group members.

These additions created a new problem, namely desensitization due to antenna spacing, the increase in receiver sensitivity and the increase in transmitter power.

The only solution to the problem was to incorporate a high gain antenna and a diplexer.

After much hunting and cajoling a UHF diplexer was located and obtained. Of course it had to be returned and tested and many thanks are extended to John VK3ZRV for this task. The diplexer offered 80 dB attenuation in the receive mode to the transmitter. The repeater was now a workable system and gave constant copy from most parts of suburban Melbourne. As mentioned previously, amateurs are never satisfied and an application for a change in operating locality was granted.

The repeater is now located on a high ridge in the eastern suburbs of Melbourne and commands one of the best UHF locations for greater Melbourne. It has in fact been activated from Ballarat.

When this article was compiled, VK3RAD was one month off its first birthday and has enjoyed a failure free existence. Apart from frequency checks and inspection, the repeater has operated 24 hours a day and looks like having a good future.

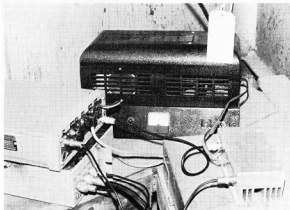
TECHNICAL SPECIFICATIONS

Transmitter: PYE WESTMINSTER with out-board PA (20 watts), giving 16 watts at the aerial port. Deviation 7.5 kHz.

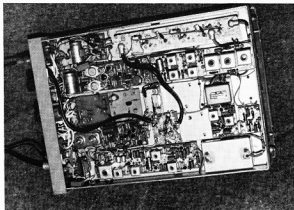
Receiver: Mute sensitivity 0.25 uV. Sensitivity 0.2 uV for 20 dB quieting. 3N210 MOSFET pre-amplifier.

Antenna: UHF "RINGO".

Other relevant information: Call sign — FSK, Time out facility — 2 minutes and automatic identification on restoration. ■



VK3RAD 70 cm Repeater — Power supply at rear, main Westminister repeater unit sitting atop diplexer — 20 watt RF-PA on right.



Inside view of the receiver section of the Westminister repeater.

ON THE ROAD WITH THE UNIDEN 2020

Some notes by Alan Noble VK3BBM
Reprinted from *The Radio Bulletin* (EMORC) October 1977.

Every dog has his day and in that respect the owners of all those 101s and all those 520s will no doubt find this as interesting as those to whom it is primarily addressed. Being secretly of fastidious tastes and having that strong desire to own only the best on the market, I naturally equipped my humble shack with the UNIDEN 2020. This was in the good old days when the trade would only sell that sort of gear to licensed AMATEURS (and anyway I had a Limited, didn't I?) and I needed something to listen to the big boys on.

On the occasions of a visiting full licensee the machine would be put through its paces and seemed to perform up to all expectations — except that I did not yet collect all the commissions for the sets which I undoubtedly sold.

Now having mastered the art of copying more at some very peculiar speed I found myself at last qualified to turn the knobs on my gear under my own steam. And this I did, I might tell you. And I did it mainly at night.

To mark my eventual success I put several 807s out of commission, thus further qualifying as a full amateur, put a quid in my pocket and ventured down to the local amateur hardware store to purchase a bit of prefabricated gear called an external VFO. This was duly connected to the main rig. Of course DX was the only thing to work and I tuned all that beautiful PLL circuitry to roughly 14 MHz, and set myself for many happy hours of DXing. Three months later I had given up going back to other station's calls as the fellows with the big guns and beams obviously were not going to talk to small fry like me. It was very apparent that if you ran a vertical you were on the outer. So a change in tactics was in order and firstly to make sure I was sort of in vogue with my operating practice I toolted down to 3.5 MHz and got in with the short-haul gang. Here I was accepted and found that all who used this band were gentlemen like myself.

Having proved myself on 80, the call of the DX returned and I ventured with some trepidation to that revered sanctuary at 14 megs. And I called CQ and I called it many times but the F layer would not answer.

By this time, as it was the end of another month, I was much distressed with frustration. So much so that I had a vision which said that I should change my call to something exotic like AN4Q2 . . . but I didn't. And it came to pass one evening soon after that, that another gentleman was also on the band (following an arrangement made via 600 ohms) and I called him to test another microphone. He came up and said that I should have another go at tuning up as I was only S1 on his meter. This I reluctantly did as I knew I had got it all together the first time anyway. He then asked me to turn down the mic gain as I was unreadable. Barley Charlie, just who does this guy think he is? But I knew he would not fool me and I also knew he used reasonably good gear (called Collins, I think) so I did as I was told. When I had finally turned the mic

gain down to practically zero I was rewarded with a 4-1 report. Not quite the best that has been achieved with 100 watts PEP at 12 miles. Just to keep the story straight I had not introduced the microphone that I wanted to test and was using the standard Uniden mic.

We were operating on 14.115 and I knew that was true because that's what the dial said. Now came the comment that my audio was FMing and that is a facility the UNIDEN does not have, so something is but definitely screwy. Up came the suggestion that I should turn on my counter and check what was going up the spout, and I really took that as a vote of no confidence in my rig. Staggering with hurt pride I turned the counter on, ran some carrier and out of the corner of my eye squinted at the lying readout . . . 14.215. Quite unperturbed (born in Collins operators) he said he would go walkabout up the band and have a look while I tuned again without touching the VFO. Back came the report that I had a beaut carrier on 14.215 but there was no sign of any audio up there. Had my fantastic PPL become a frantic fazed loose hoop?

To cut a long story short, because I believe you are interested only in the facts and you have no time to read untechnical drivel (you can do that any time on an amateur band), we performed a number of isolation tests with the following results:

1. External VFO CONNECTED to Transceiver and Operation Switch at INTERNAL.

- (i) segment switch on transceiver at 100 kHz position
segment switch on external VFO at 100 kHz position

RESULT — transmission on frequency indicated on main VFO dial; audio FMing.

- (ii) segment switch on transceiver at 200 kHz position
segment switch on external VFO at 200 kHz position

RESULT — transmission on frequency 100 kHz higher than indicated on main VFO dial with low power signal on correct frequency; audio FMing.

- (iii) segment switch on transceiver at 100 kHz position
segment switch on external VFO at 300 kHz position

RESULT — as in (ii) above except main power now transmitted 200 kHz higher than indicated on main VFO dial.

2. External VFO CONNECTED to transceiver and Operation switch at EXTERNAL.

All transmissions on frequency as indicated by the EXTERNAL VFO dial but audio FMing.

3. External VFO DISCONNECTED from transceiver and Operation switch at INTERNAL.

All transmissions on frequency as indicated by main VFO dial and good audio quality Report 5-9 signal.

And so we had the clue to the problem — transceiver operating OK but when the external VFO was connected it caused the audio to FM and in addition it was taking over frequency control even though the Operation switch was at INTERNAL.

With the kind help of Peter and Duncan at Vicom the trouble was diagnosed and corrected without much agony. The 5 volt line from the transceiver to the external VFO is rather critical. When checked with a high impedance meter this was found to be 4.8 volts and was corrected. In addition the contacts on the plug-in board in the external VFO were cleaned with a spray of common cure-all. It appears that a few extra artificial diodes had been introduced to which all the higher class solid state devices took exception.

A week after carrying out the above tests, I was talking to Dusty VK3AYO who was rather put out about receiving a 5-7 report from a VE station. Being a regular brass pounder, Dusty queried the Canadian who said he could not give better than 5-0 as Dusty was not moving his meter. Dusty reckoned he did not give a hang about the 5-0 but what about this 7 business? The report was pronounced chip on Dusty's CW sigs. I told Dusty about my problem and putting two and two together with 7 I suggested we run some tests. These showed similar results to those shown above with chirp apparently caused by the shift in signal frequency. We have found the fault frequency dependent and was not evident on 3.5 MHz (this checks with my phone experience) but was pronounced on 14 MHz and above. Two other differences were also noted — Dusty's external VFO would not start on 7 MHz and also he did not have the problem of the external VFO taking over when on internal switched position. Dusty no longer sounds like one of those U station wash-borers.

A few days after re-installing my gear I heard Doug VK3BIE talking about a mysterious distortion on his audio. I was able to tell him about the above and steer him hopefully in the right direction. Hope all is now OK, Doug.

My sincere thanks to Dave VK3DC for his assistance and patience in carrying out the original isolation tests.

Next time someone hears me working split frequency would they please let me know? Happy VFOing. ■



would you buy from this show?

WHAT DO YOU EXPECT FROM YOUR AMATEUR SUPPLIER?

- A knowledgeable amateur gear specialist - right?
- Amateur oriented staff - right?
- Ability to understand your problems - right?
- Ethical conduct - right?
- A guarantee that the equipment he sells is factory supported with parts & expert service - right?

ON THE OTHER HAND,

If out-price bootlegged gear is your scene, IF pirates have easy access to equipment purchase, IF the cash register syndrome is obvious, IF the salesman loses interest when you ask for a brochure, IF the service department is just in name, then it's not VICOM.

**CONSTANCY
& SERVICE**

VICOM

10.7 MHz CRYSTAL FILTERS FOR FM

SYNONYMOUS FOR QUALITY AND ADVANCED TECHNOLOGY



KVG

MATCHING CRYSTAL DISCRIMINATORS

NBFM	XD107-01
WBFM	XD107-02
(1-9)	\$22.10 each

EXPORT ENQUIRIES WELCOME

Oscillator Crystals 50 kHz through 150 MHz available to order. Parallel resonant (30 pF) to 20 MHz, series resonant above 20 MHz. Write for quotation to your requirements (include mechanical size & frequency).

Filter Type	XF107 A	XF107 B	XF107 C	XF107 D	XF107 E	XF107 SD4	XF107
Application	NBFM	NBFM	WBFM	WBFM	WBFM	NBFM	NBFM
Number of Filter Crystals	8	8	8	8	8	4	2
Bandwidth	12.0 kHz	15.0 kHz	30.0 kHz	36.0 kHz	40.0 kHz	14.0 kHz	14.0 kHz
Pass Band Ripple	← 2.5 dB		← 2.5 dB		← 1 dB		← 2.5 dB
Insertion Loss	≤ 3.5 dB	≤ 3.5 dB	≤ 4.5 dB	≤ 4.5 dB	≤ 4.5 dB	≤ 3 dB	≤ 1.5 dB
Input Output	820 Ω	910 Ω	2000 Ω	2700 Ω	3000 Ω	910 Ω	7500 Ω
Termination	25 pF	25 pF	25 pF	25 pF	25 pF	35 pF	
Shape Factor	(70 dB) 2.4	(70 dB) 2.3	(70 dB) 2.2	(70 dB) 1.9	(70 dB) 2.0	(40 dB) 3.0	(20 dB) 3.6
	(90 dB) 2.8	(90 dB) 2.9	(90 dB) 2.7	(90 dB) 2.5	(90 dB) 2.5		(30 dB) 5.7
Ultimate Attenuation	← 90 dB		← 90 dB		← 60 dB		← 30 dB
Size	1 27/64" × 1 3/64" × 3/4" High		← 30 dB		Hc 6/u		Hc 18/u
	Mounting Hardware Included		← 30 dB		can		can
Price (1-9)	← \$40.80		← 30 dB		\$18.95		\$7.95

si

**SPECTRUM
INTERNATIONAL INC.**
Box 1084A Concord
Massachusetts 01742 USA

Shipping weights: Filters 2 oz. ea., Crystals 1/2 oz. ea.
Registration Fee: \$2.00; Air Mail: 31c per 1/2 oz.
All Prices in U.S. Dollars.

"WILLIS" AIR-WOUND INDUCTANCES

Take the hard work out of Coil Winding, use — "WILLIS" AIR-WOUND INDUCTANCES

No.	Turns	Dia.	Per L'gth	B & W	Price
		inch	inch	Equiv.	
1.08	1/2	8	3	No. 3002	99c
1.16	1/2	16	3	No. 3003	99c
2.08	5/8	8	3	No. 3006	\$1.16
2.16	5/8	16	3	No. 3007	\$1.16
3.08	3/4	8	3	No. 3010	\$1.40
3.16	3/4	16	3	No. 3011	\$1.40
4.08	1	8	3	No. 3014	\$1.56
4.16	1	16	3	No. 3015	\$1.56
5.08	1 1/4	8	4	No. 3018	\$1.75
5.16	1 1/4	16	4	No. 3019	\$1.75
8.10	2	10	4	No. 3907	\$2.52

Special Antenna All-Band Tuner Inductance

(equivalent to B. & W. No. 3907, 7 inch)

7" length, 2" dia., 10 TPI Price \$4.36
Reference: A.R.R.L. Handbook, 1961

Willis Pi-Coupler Unit — \$23.95
Stockists of Transmission Cables, Insulators and Hard Drawn Copper Antenna Wire

Write for range of Transmission Cables

WILLIAM WILLIS & CO.
PTY. LTD.

Manufacturers and Importers
77 CANTERBURY RD., CANTERBURY
VIC. 3126 Phone 836-0707

Sideband Electronics Sales

DISTRIBUTORS OF COMMUNICATION
TRANSCIVERS



Cushcraft

YAESU



ICOM

KLM products

V.H.F. transceivers **G.D.R. antenna rotators**

Mark Mobile Antennas



KENWOOD



SEND FOR A FREE CATALOGUE AND PRICE LIST



SALES & SERVICE

24 KURRI ST., LOFTUS. N.S.W. | OPEN SATURDAYS TILL
P.O. BOX 184, SUTHERLAND. 2232 | NOON. Phone: 521-7573

AMATEURS' PARADISE

**SAVE ON FREIGHT CHARGES —
BUY FROM QUEENSLAND'S STOCKIST**

All the LATEST KENWOOD RANGE in stock — Also ICOM IC202,
IC215, IC502, IC22S — YAESU FRG7 — MIKES — CLOCKS —
HF & VHF ANTENNAS — BALUNS — ROTATORS — MORSE
KEYS — WORLD MAPS, etc. etc.

**Mail your Order and we will send by return — well packed.
SALES BACKED BY EXPERT WARRANTY SERVICE.**

Telephone: (075) 32 2644
121 NERANG STREET, SOUTHPORT, QUEENSLAND 4215
(Opp. Southport Hospital)

ALPHA

**LINEAR HF
POWER AMPLIFIERS**

MODEL 374 — \$1,895.00

MODEL 76P — \$1,795.00

Enquiries:
JAMES GOODGER VK2JO

**AUSTRALIAN SOUND
AND SIGNAL RESEARCH**

G.P.O. BOX 5076,
SYDNEY 2001
(02) 36 7756

Amateur Radio February 1978 Page 11

Game, and author, bushman and artist, Mr. Len Beadell, and Mrs. Beadell. Important personages from amongst the Divisional members invited as special guests were Mr. Geoff Taylor VK5TY, and Mrs. Taylor, and Mr. Rob Wilson VK5WA, and Mrs. Wilson. Lastly, but by no means least, arrangements had been placed in hand to ensure the presence of the Federal President of the Wireless Institute of Australia, Dr. David Wardlaw VK3ADW.

Before commenting on the opening ceremony a description of the building and facilities and several other aspects of same would be in order.

The most striking aspect of the building would be its outside appearance. Built mainly of various coloured bricks, it is decorated with cement columns and archwork, and also adorned with cement filigreed patterns between arches and columns. One feature which cannot be overlooked is the tall square brick chimney surmounting the building, and incidentally providing an excellent basis for the support of antennas. The chimney is also topped at each corner with concrete columns.

Facilities inside the headquarters are as follows: A large downstairs meeting room providing accommodation for approximately 130 members. An upstairs lecture room for YRCS and technical classes. A mezzanine floor on which the Publications Officer and Equipment Supplies Committee display their wares and also used at meeting breaks for the supply of tea, coffee and biscuits to members and visitors at meetings. Adjacent to the mezzanine floor are a lock-up store room and the separate transmitter room, which is well carpeted and houses three beautiful wood grained consoles made by members, which will be gradually filled with equipment and pressed into greater use as the official Institute Station VK5WI expands. Ladies' and gentlemen's toilet facilities are located to one side of the mezzanine entrance door. The main hall may be entered downstairs from the mezzanine floor or through two side entrances at ground level. The upstairs lecture room has a fire escape to ground level at the front of the building.

One problem encountered during the establishment of the headquarters was that of furnishing, particularly with respect to the seating of members at meetings. It was thus decided to establish a "Chair Fund", to which members could contribute at a rate of \$5 per chair. This fund was most successful, with a total of \$500 being contributed by members. Consideration was given to affixing a plate on each chair showing the name of the donor concerned, however this idea was shelved in favour of a plaque showing the names of contributors to the fund and which would provide a more lasting record. (Plates could be removed and lost and chairs damaged and replaced over the years.) The plaque is in the form of an etched copper laminate board and hangs on the wall of the main meeting room adjacent to the trophy niche wherein the Remembrance Day Contest and other trophies have resided for some time. Amongst the names on this plaque

appear some "In Memoriam" for Silent Keys of the Division. Now to return to the opening ceremony itself and arrangements in connection with same.

The visitors and members, numbering approximately 200 in all, provided an overflow crowd. The ceremony was completely recorded on both colour video tape and audio, whilst those not able to crowd into the main meeting hall were able to watch the ceremony on closed circuit TV monitors placed at other strategic locations. Copies of these recordings are, incidentally, available to interested groups and may be obtained by contacting the VK5 Division.

Visitors and members were welcomed on behalf of the Divisional Council by the President of the South Australian Division, Gary Herden VK5ZK. In welcoming all present, Gary detailed the events over the years leading up to this culmination of efforts and referred to the co-operation and interest shown by The Thebarton Corporation and the National Trust in our project. He then introduced Mr. Game of the National Trust, who congratulated the Division on its efforts to date. Mr. Game in fact had himself been involved with the original building project and had met the late Walter Burley Griffin during this time. He also stated his and the National Trust's appreciation of the way in which the Division had obviously gone about retaining the original aspects of the building and the need for the retention of such memorials as part of our National Heritage.

Following Mr. Game's interesting speech, Gary VK5ZK called upon the Federal President, Dr. David Wardlaw VK3ADW, to address the gathering. David in his inimitable manner did due justice to the occasion. In representing the Federal body and all the amateurs of the Wireless Institute, he referred to the progress and gains made as a result of such an organisation as ours. He also expressed his appreciation of such an opportunity to meet the Council and members of the South Australian Division and passed on his congratulations in respect of this attainment by the Division.

The Division President then introduced the Mayor of the Thebarton Corporation, Dr. Flaherty, who also had many congratulatory remarks to make insofar as the Division's efforts were concerned. In speaking Dr. Flaherty stated that, in his opinion, the Division had available to it a headquarters for as long as it should last, and one of which it could be justifiably proud. At this time the Mayor unveiled a beautifully made plaque in commemoration of the occasion. This plaque also is made of etched copper laminate and carries the inscription:

"This building was officially opened as the headquarters of the South Australian Division of the Wireless Institute of Australia on April 3rd, 1977, by the Mayor of Thebarton, Dr. J. A. Flaherty, M.B., B.S., J.P., in the presence of the Federal President of the WIA, Dr. D. Wardlaw VK3ADW, and Councillors of the South Australian Division: G. H. Herden VK5ZK (President),

M. J. Hart VK5ZMH, C. J. Hurst VK5HI, R. A. Murphy VK5MM, G. Preston, VK5PI, G. M. Bowen VK5XU, I. J. Hunt VK5QX, J. B. Mitchell VK5ZJB, C. M. Pearson VK5PE, I. W. Wood VK5NVU."

Also on the plaque is a sketch of the building. Around this unique plaque the border is comprised of the symbols of dots and dashes representing in Morse Code the name of the Wireless Institute of Australia and the South Australian Division. Lines across the plaque in similar form spell out the abbreviation WIA, WIA.

Herein lies a small story! This plaque, and similarly the Chair Fund plaque, were designed by Len Beadell, well known as an explorer, bushman, artist and author of a series of books detailing his experiences in the Australian outback. Even the morse code border was Len's idea. Upon being approached to carry out the design work, Len agreed with alacrity and applied his talents fully to producing an outstanding example of art work. He even devoted most of a week-end standing outside the building making a number of detailed sketches to guide himself in the final product. The original of one of these sketches is now a prized possession of the writer of this article.

Following the unveiling of the plaque the Divisional President VK5ZK then spoke a few further words in reply to those who had addressed the assembled crowd. Thus each of the authorities connected with the Burley Griffin Building were ably represented.

During the ceremony Gary VK5ZK read a number of telegrams and messages of congratulations which had been received from far and wide. These were as follows: From — Alice Springs Community College Radio Club. John Emmell VK4ZGB, ex VK5 member. Bondi Junction, N.S.W. — don't build special enclosure for RD Trophy. President Darwin Amateur Radio Club. VK8CW Alice Springs, VK8HA and VK8DI Darwin. VK8AC Nhulumbi. P29BS. VK6XY. VK6LG Len. VK4ATE, VK4AEM, ZL1BOL, ex Darwin. VK2ATY. President VK6 Division. President VK2 Division. VK5WB/4. Cairns Amateur Radio Club. Intruder Watch Co-ordinator, Alf Chandler. Secretary-Manager WIA, Peter Dodd. Chairman VHF/UHF Advisory Committee, Peter Wolfenden. Editor "Amateur Radio", Bruce Bathols 3UV. IARU Liaison Officer. Federal Contest Manager, Kevin Phillips 3AUQ. Federal Historian. Federal Education Co-ordinator. Chairman Federal Repeater Sub-committee. Chairman WIA Project Australis Group.

Following the ceremony members and visitors were provided with refreshments and given the opportunity to inspect all of the building and various facilities. A display of antique radio equipment provided by Eric VK5LP and set up on the mezzanine floor provided much interest, whilst the official station VK5WI was on the air. Special QSL cards for contacts with this station on the opening day are being produced.

Many people could be mentioned as having contributed to the efforts referred to herein, but a list of such names would in-

deed be formidable. Workers throughout the project from its inception, right up to the efforts of the ladies providing afternoon refreshments, arranging tables and floral decorations, members arranging media publicity, yes, we even made the TV news, cleaning up afterwards, organising PA and recording facilities, and many other functions, all must be thanked for their excellent efforts.

To the Divisional Council which planned the overall week-end activities, from the special council meeting to meet the Federal President and the dinner held the previous evening in his honour, right up to the closing stages of the ceremony and afternoon tea, the whole of the activities were most gratifying. The Federal President was even able to fit into his rushed schedule a short visit to the Micro-Processor Group meeting, and an afternoon

at the Federal Council's QTH to meet individual members and other officers active in the Division.

So I trust that this written description may have been of interest to whoever has read this far. For the South Australian Division this event has certainly been a milestone, and we hope the beginning of yet another successful era in the progress of Amateur Radio in this State. As at the date of writing the new headquarters is undergoing a great deal of use. Each Sunday the Divisional Broadcast is originated from there with VK5WI operating on 160 metres and relayed on 80, 40, 20, 10, 6 and 2 metres in Adelaide, on other frequencies in both Mount Gambier and Darwin, and until recently on 11 metres in Adelaide.

The monthly Council and General meetings are held in the building. Three nights

per week see classes for those studying for the Novice Amateur Operator's Certificate of Proficiency. Youth Radio Club classes are conducted in the building, whilst Micro-Processor Group and VHF Group meetings also take place there.

Should you at any time be in Adelaide and wish to view the Burley Griffin Building, it is located in the Thebarton Corporation yards in West Thebarton Road, Thebarton, approximately three miles west of the centre of Adelaide. All visitors are welcome to attend any of our meetings should their visit occur at an opportune time, and should you wish to inspect the building at close quarters, contact with any member of the Divisional Council would permit such an arrangement. A visit of this nature would most certainly prove worth your while I can assure you. ■

A. Shawsmith VK4SS
35 Wynnot Street, West End, 4001

A FUNNY THING HAPPENED IN BERT'S SHACK THE OTHER MORNING

Bert's rig is in the bedroom above his shop. The big thing about bedroom shacks is that it's all together in the one room; very cosy and intimate on nights when DX is scarce.

Bert's boudoir is not overly large. There's space for a chair at the rig but no more: a visitor must sit on the bed — in fact, this is what Bert often did when he was listening for a new prefix to show up. He used phones and his wife, Bessie, seldom stirred; she was used to his nocturnal natterings. However, if cold or snugly amorous, she was likely to roll over on to his side of the bed and throw out an arm around her OM's waist or thereabouts, as if to say, "come on, cut out all that senseless nonsense, come back here where it is warm".

On this particular morning, Bert rose at the usual hour and set about the daily routine. First, a few quick moments at the rig to see what's doing, then downstairs to prepare the shop for its first customers. He usually left the rig on and tried for another short listen before opening up. Ernie the milkman galloped in from the pre-dawn dark outside. He painted a salutary greeting, put down his jiggling crate and prepared to write out a docket. In the silence, there came from above, the faint but clear sounds of the rig. Bert realised he'd left the gain well up.

Ernie tilted an ear. "You're one, too?" he asked.

"I'm one, two, what?" queried Bert.

"A good buddy — a CBer."

Bert drew himself up to full stature. "I'm a member of the WIA and belong to the amateur service," he said, hoping to establish superiority at the outset.

"Oh yeah, a Ham!" said Ernie contemptuously, "I see your vertical. Does it work any DX?"

"Plenty."

"Me, too — Japan, New Zealand, the States and all over," boasted the milko. "I've got a 4 el. monster moonraker quad up 60 ft."

"Liari!" thought Bert, as he looked out through the door to a quarter wave screwed on to the bumper, but he sarcastically said, "What, on top of the van?"

A smirk spread over Ernie's eighty IQ dial. "Nah, at home — and a 100W after-burner, too."

"I hope the neighbours dob you in."

"No way, I tell 'em I'm a Ham novice just starting."

"Great for AR's image," thought Bert, "a nutty rubber duck on 11, posing as a novice on 10." He made a quick mental calculation and began to burn: Ernie's 5 watt CB-licensed set was beaming out 20 times more RF field than his own 100W Ham job. CB is full of real good buddies — they often come into his shop — but what to do with a big mouth "Johnny-come-lately" like Ernie. Maybe if he heard some real DX . . .

"Got a minute?" asked Bert.

"Yeah, sure."

"Come on up and I'll let ya hear some real raries." He hoped this would make Ernie drool. "We don't switch channels, we tune bands, ya know!" Again he let sarcasm lace his voice.

At the bedroom door, Bert gave the milko the "be quiet" sign. "Ssh," he said, "the YF's asleep, but don't worry, she won't wake." Bert slid into the chair and pointed to the vacant side of the bed which was nearest the rig. After an apprehensive look at Bessie's somnolent form on the far side, Ernie eased himself gingerly down and donned a pair of phones. Eighty, forty and twenty were open and Bert tuned in a variety of DX and Ernie seemed quite impressed.

As it was early morning, Bert began to feel the call of nature. In short, he'd hafta go — and quick. "Be back in a tick," he told the milko, "tune the rig, or change bands if you want to." He'd hardly made it to the bathroom, when a piercing shriek rent the morning stillness and Bessie, clutching her nightie, shot from the bed-

room, closely followed by Ernie with a look on his Dagwood dial, as if his manliness had come under threat — which it had, incidentally.

"There's a strange man in my room," Bessie screamed at Bert (she'd never seen the milko) "and you're sitting there, doing nothing."

"I am d—," began Bert.

"Go on, grab him quick," yelled his YF.

At that moment Ernie bolted past the bathroom, down the stairs and out into the dawn.

"Look at that!" said Bert, still unmoved, "not even a goodbye — or a bloody word of thanks." Then, suddenly, he tumbled to what had happened in the bedroom. He let out a great guffaw and rose to his feet. "Ha, ha, ha, you tried to drag old "Blue Tops" into bed: he musta thought we were trying to set him up for something — they say he's a woman-hating bachelor. That'll take his mind off CB for a while. Suppose I should apologise to him — but no way!"

"Apologise?" screamed Bessie between hysterical sobs.

Bert could see he was going to cop a long rave. He should have sympathetically explained but there was the shop to open, so he turned chauvinistic instead. "Belt up," he yelled, "or I'll tell all the customers I copped you in bed with the milko."

Of course Bessie won out in the end. Bert is now relegated to the dog house, which, in his case, is at the end of a draughty verandah: but it's an ill wind that blows no good at all. As he now no longer has it all together — nor is ever likely to again, he's decided to build a super shack in the yard and throw up a monster sky hook. This will shut the biggest CB mouth and make DX a piece of cake.

By the way, Ernie still gallops in each morning, past a new 4 el. quad, deposits his milk and leaves with never a word of CB or AR. Bert just smiles in a superior sort of way at his departing back. ■

AUSTRALIAN SOUND AND SIGNAL RESEARCH

P.O. BOX 5076 G.P.O. SYDNEY 2001

Enquiries: JAMES GOODGER VK2JO. TELEPHONE SYDNEY (02) 36 7756

USED EQUIPMENT BARGAINS

- ☆ HEATH SB-220 LINEAR AMPLIFIER, AS NEW, PAIR EIMAC 3-500Z PA \$400.00
- ☆ TWO DENTRON MLA-2500 LINEARS, PAIR EIMAC 8875, GOOD CONDITION \$500 ea.
- ☆ DRAKE TRC4 SSB/CW TRANSCEIVER, 300 WATTS INPUT AC-4 AC POWER SUPPLY, FULL 10m COVERAGE, COMMUNICATIONS SPEAKER, AS NEW \$675.00
- ☆ CDE HAM II ANTENNA ROTATOR WITH 100 FOOT BELDEN ROTATOR CABLE \$200.00
- ☆ HY-GAIN 204BA 4 ELEMENT 14 MHz YAGI WITH HY-GAIN BN-86 BALUN AND 100 FOOT RG8U LOW LOSS CABLE \$225.00

NEW EQUIPMENT

- ☆ ALPHA 374 BANDPASS LINEAR AMPLIFIER, USES THREE EIMAC 8874 CERAMIC METAL TRIODES, 10-80 METRES, THE ULTIMATE IN LINEARS \$1895.00
- ☆ ALPHA 76P MANUALLY TUNED VERSION OF ABOVE, 160m-10m, 1-30 MHz \$1795.00
- ☆ CDE HAM III ANTENNA ROTATOR WITH 100 ft BELDEN ROTATOR CABLE ... \$320.00
- ☆ DRAKE R4C RECEIVER WITH NOISE BLANKER, DRAKE FILTERS, 15 EXTRA CRYSTALS COVERING INTERNATIONAL SHORTWAVE, MARINE, 160m, 11m, DRAKE MS-4 SPKR \$950.00
- ☆ DRAKE T4XC TRANSMITTER WITH DRAKE AC-4 AC POWER SUPPLY 160, 11m \$805.00
- ☆ DRAKE MN-2000 ANTENNA MATCHING NETWORK, 10-80 METRES \$280.00
- ☆ ALPHA DEVIL MOBILE LINEAR AMPLIFIERS 12V D.C. BI-LINEAR AMPLIFIERS 3.0-29.5 MHz TRANSMIT, 14-29.5 RECEIVE, 160 WATTS OUTPUT PEP WITH 8 WATTS DRIVE \$200.00
- ☆ FULL RANGE "WILSON" VHF HAND HELD PORTABLES, SYNTHESIZED, HF & VHF ANTENNAS AND ACCESSORIES P.O.A.

AUSTRALIAN SOUND AND SIGNAL RESEARCH

JAMES GOODGER VK2JO TELEPHONE (02) 36 7756

ANNOUNCEMENT

CALLING ALL AMATEURS, NOVICES

SHORT-WAVE - LISTENERS

We've often been asked why our amateur radio section hasn't been one of our biggest departments. After all, Dick and many of his staff hold amateur licenses. The reason is simple: we, like everyone else, have had tremendous problems obtaining supplies from local distributors. We maintained it was pointless having a large showroom displaying a lot of lovely samples if we couldn't sell them because we had no stock. . . We understand many of the suppliers work this way: we would not. The problem is over. After many years, Dick Smith has managed to secure an agency for the world's leading amateur gear:

DICK SMITH IS PROUD TO ANNOUNCE HE HAS BEEN APPOINTED A DIRECT DISTRIBUTOR FOR



Check out this incredible YAESU equipment:
FT-101E - 10 to 160 metre amateur band transceiver, with built-in AC/DC power supply. Comes with microphone. 260W PEP input SSB, also has CW & AM. Solid state except for driver & final in tx. Cat D-2860 \$850.00

FT-301 - 10 to 160 metre transceiver, fully solid state for mobile or base use (12V DC). 200W PEP input, (SSB). AM, SSB, CW & FSK. Cat D-2870 \$949.00

FT-301S - as above, but 20W PEP. Ideal for novice use. Cat D-2880 \$699.00

FL-110 - Linear amplifier, companion unit to FT-301S. 20 watts in, 200 watts PEP output. Turns your novice rig into a full license version. Cat D-2884 \$249.00

FT-227R - Fully synthesised 2 metre rig, with 'computer select' any channel of 800 available between 144 & 148. Features far above any other unit around at this price, has memoriser to instantly recall channel.
NEW UNIT! Cat D-2890 \$375.00

FL-2100B Linear amplifier with 1.2kW capacity. 10 to 80 metres, uses 2 5728 triodes. Twin fans, similar style to FT101E. Cat D-2546 \$578.00

FP-301 POWER SUPPLY - 12 volts at 20 amps. To suit the 301 series transceivers. Cat D-2872 . . . \$175.00 (price applies only if purchased with matching transceiver; otherwise duty applies to power supply).

YO-100 - Monitor 'scope. Designed for use with the FT101E, but also suits other Yaesu units.
 Cat D-2862 \$279.00

YO-301 - Monitor scope to suit 301 series.
 Cat D-2882 \$349.00

YC-500S - Digital frequency counter, to 500MHz. Ideal for VHF/UHF workers! Accuracy 1PPM.
 Cat D-2892 \$439.00

Clock - 24 hour type. Starten up your QTH with the QTR-24, a deluxe ham clock which shows the time in any zone at a glance. Runs for a year on one battery. Cat X-1054 \$33.00

Yaesu Desk Microphone For really smart appearance. Suits all the Yaesu equipment (replaces hand-held unit supplied with rig). Cat C-1116 \$49.00

DICK SMITH ELECTRONICS



SHOP HOURS
 Mon-Fri: 9AM - 5:30PM
 Sat: 9AM - 12 noon
 (Brisbane: 1 hour earlier)

bankcard
 welcome here

Order value P&P charge
 \$10 - \$24.99 \$2.50
 \$25 - \$49.99 \$3.00
 \$50 - \$99.99 \$3.50
 \$100 or more \$4.00

SYDNEY 125 York St. City, Ph 29 1126 Open 'til 8PM Thursday	SYDNEY 361 Hurme Hwy. Bankstown, Ph 709 6600 Open 'til 8PM Thursday	SYDNEY 162 Pacific Hwy. Gore Hill, Ph 439-5311 Ample parking at door	SYDNEY 30 Grove St. Paramatta, Ph 883 1133 1st floor - 'freely store'	MELBOURNE 299 Lonsdale St. City, Ph 67 9824 New right in town!	MELBOURNE 656 Bridge Rd. Richmond, Ph 42 1614 City access - huge stock	BRISBANE 166 Logan Rd. Burswood, Ph 391 6233 Open 8.30AM Now Open - See us!	ADELAIDE 203 Wright St. City, Ph 212 1962 Now Open - See us!
---	---	--	---	--	--	--	--

MAIL ORDER DEPARTMENT PO Box 747, Crows Nest, NSW 2065. Phone 439 5311 Post & Pack extra

WE HAVE DEALERS RIGHT ACROSS AUSTRALIA - THERE'S ONE NEAR YOU!

1977 WESTERN ZONE CONVENTION

The Annual Convention of the Western Zone, Victorian Division, WIA, was held at Ararat on the weekend of October 22nd and 23rd. Registrations were taken at the Golden Gateway Motel on the Saturday afternoon while Trade Displays were conducted by Vicom, John Lewis Retra-Vision and the Moorabbin Radio Club.

About 90 people attended the dinner which followed. Visitors included Keith VK3YQ (Federal Councillor), John VK3ACA (Vic. Div. Secretary) and Gordon VK3TF (Vic. Div. Councillor). The after dinner speaker was Michael Goode VK3BDL, who spoke about amateur radio in England and Europe. He outlined some of the problems encountered in gaining reciprocal licences and showed a number of slides of his recent trip.

The Ararat trotting track was the venue for Sunday's activities. Mavis VK3BIR and Norma VK3AYL finally found Jim VK3NDT, the 80 m fox. The 27.125 MHz hidden transmitter was found by Gary VK3ZSP and Ron VK3KN. Trevor VK3JYT found the 146.0 MHz hidden transmitter, followed closely by Roger VK3RG. The 144.1 MHz sniffer hunt was won by Dennis VK3ZKH, with Helen Guy, harmonic VK3ZUY, second.

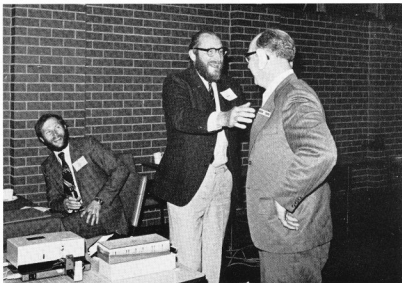
A magnificent array of salads prepared by the Ararat Ladies, led by Lyn, YF VK3NEK, complimented by barbeque lunch.

Following lunch the 300 Hz to 3.3 kHz scramble was won by Mavis VK3BIR, with David VK3AGB second. Chas VK3NET then delighted the crowd with his fully aerobatic radio controlled model aircraft. Stunts performed included several low rolls over the crowd, dropping a load of wrapped lollies each time.

Special guest for the day was Madam Mayor, Jess Boyles, of Ararat City Council, who presented the prizes.

A number of special Western Zone awards were also presented during the weekend.

These included the "Big Ears" award to Oliver VK3AEU, a very regular listener on RWZ-7, a specially modified tuning fork to help George VK3ALS to control his "mountain goat oscillator" and a "new improved power supply" to replace the "gas powered thermocouple" used by Woody VK3AGD during the power strike. A master control switch presented to David VK3AGB will prevent him from accidentally operating on two frequencies simultaneously. A specially silenced saw will allow Pat VK3ADN to cut wood without causing accidental QRM on RWZ-7. ■



The "Big Ears" Award being presented to Oliver VK3AEU by Woody VK3AGD. Left to right: Peter VK3AQO, Woody VK3AGD, Oliver VK3AEU.



Woody entertaining the children after the model aircraft display.

CLEARING THE AIR

Reprinted from Westlakes Radio Club
Monthly Newsletter, December 1977

With 500,000 licensed amateurs in the world, and an average increase of over 50,000 a year, there will be a doubling of our numbers by 1980. This would be fine if some beneficent authority were to double the width of our bands, although even in those improbable circumstances we should still be facing the same QRM levels as we are today.

Everyone realises that the congestion on certain bands, at certain times, is beyond the joke, and that complete strangulation is sometimes very near. Therefore, since no one is going to widen them for us, we must take the matter in hand and do it for ourselves.

How could we double the effective width of the amateur bands, as we know them today? One answer would be a worldwide agreement whereby every amateur restricted himself to working for only half the available time — either by going on the air on alternate days, or by restricting his operation to alternate periods of one hour or two hours. This method would be effective (if it could be enforced), but would obviously be extremely unpopular.

And it would be an admission of defeat — rather like improving the roads of this country by allowing motorists to drive on alternate days. If we were all to talk less — that would be equivalent to increasing the space available on the bands. And this should be pretty easy, when one notes the enormous amount of long-winded natter that drools on and on without imparting any information whatever. Maybe this is how the term "talkpower" was derived in the first place! And, of course, the use of long calls when a short snappy one would be more than effective. And the use of phonetics repeated at nauseum, like "I spell for you" and so on.

In several European and Asian countries it is obvious that a semi-trained type of operator can be let loose with the most primitive transmitting gear. Either these countries do not go in for any form of monitoring, or their authorities simply do not care what happens as long as it is happening in an amateur band. A VK with a bad signal is relatively easy to deal with; how do you cope with a HA, an LZ or a YU who, apart from having a thoroughly wicked signal, is virtually impossible to communicate with on the subject? Nine times out of ten, if you tell this chap that his signal is a bad T6, with chirp and clicks, he will reply, "TKS for FB report, OM, my QSL for sure" — and then where are you?

An operator who uses up twice the necessary time to complete a QSO is as bad as another man who uses twice the width

of the band with a broad signal. It is not the intention that QSOs should be reduced to rubber stamp standards. On the other hand, what one might call "unnecessary prattle" can be cut down a lot and still leave some meat on the bone. Listen to a great many nets and call backs, at some length, and if you are honest you will be forced to admit that a lot of people keep on talking for the sake of talking. The next words are usually, "I'd better keep it short!"

Why do we take so long saying goodbye? How often do you hear three finals and a "final-final" types working out the variations on 73, see you again, hope to meet you soon, thanks for the 100 per cent enjoyable QSO, all the best — simply because they couldn't drag themselves away. And the other type of horror "This is VK2 Blah-Blah over and off and clear, and pulling the big switch, with VK4 Blah-Blah who is located 25 km north of Townsville . . ." The VOX operators are pretty slick these days. But there are those who deliver long monologues and do not listen through at all. A command of the situation calls for much use of "aahs" and "uughs" to hold the VOX in all the time. In the end the group has vanished without a soul on the frequency. The use of phonetics is a waste of time when a 5/9 signal is being received. If you happen to live in Parramaribo, Tananarivo or even Blagoveshensk, the horror is most complete. Use phonetics when plain language can't get through but the misuse makes us all sound like a mob of Charlie Bakers. ■

25 MHz Bandwidth



● 5mV Sensitivity

● 30MHz Triggering

Dual Trace Oscilloscope

at a price you expect to pay for half this performance.

The new BWD 539D is superb for CB Radio, μ Processors, Video recorders, Colour TV, Audio systems, Video games or any application where waveform fidelity and measurement accuracy is essential.

Break through the performance barrier.
Ask for your BWD 539D data sheet today.

BWD

ELECTRONICS PTY. LTD.
Miles Street, Mulgrave, Victoria. 3170.
P.O. Box 325 Springvale, 3171.
Telephone 561 2888. Telex 35115

AS REVIEWED IN
ELECTRONICS AUSTRALIA
DECEMBER 1977

N.S.W. Amalgamated Wireless (A'asia) Ltd., Sydney. Ph. 888 8111
QLD. Warburton Franki (Brisbane) Pty. Ltd., Phone 52 7255
S.A. Protronics Pty. Ltd., Adelaide. Phone 51 4713
Rogers Electronics, Adelaide. Phone 42 6666
W.A. Cairns Instrument Services, Perth. Phone 325 3144
TAS. Associated Agencies Pty. Ltd., Hobart. Phone 23 1843

BASIC ANTENNAE FOR OSCAR SATELLITE COMMUNICATIONS

By Dave Clingerman W6OAL

Submitted by Bob Arnold VK3ZBB

This article presents three basic types of antennas and the derivation of each. Since the launch of the AMSAT-OSCAR 6 spacecraft the author has, at one time or another, tried every type of antenna imaginable, for satellite communications, from a coat hanger ground plane to a log periodic helix.

During this five year period of experimentation the various configurations have been used to set such world records as, first aeronautical mobile amateur satellite communication including an airborne satellite command station over the Pacific Ocean. This was accomplished using a bent brass rod ground plane. The first maritime mobile, transcontinental amateur satellite contact was conducted using a "J" antenna for uplink and a dipole for downlink. The first automobile-in-motion amateur satellite Trans-Pacific contact was completed using a "J" on one side of the vehicle for uplink and a Webster Band Spanner mobile antenna on the other side. The claimed longest distance contact via amateur satellite, 9,264 km, Kwajalein, Marshall Islands to Tacoma, Washington was completed using a ground plane and longwire on the South Pacific end of the contact. In the setting of all these records low power was used (below ten watts), so "brute force" is not the name of the game.

A ground plane antenna (GP) can be built onto a female coaxial fitting, a BNC, N, and SO-239 being most common. This allows a coaxial feed, a great convenience. If you're a stickler for low VSWR and good impedance matching, droop the radials to about 42 deg. out of the horizontal. This increases the impedance from the normal GP, 36 ohms to approximately 50 ohms. This type of antenna can be used for both uplink and downlink. It is a fixed frequency device and an SWR approaching 2:1 will be noticed at operation $\pm 10\%$ of the frequency for which it was constructed. GPs are noted for their low angle of radiation and that is where you want to put your power, toward the horizons. The "cone of silence" mentioned in various texts occurring directly above a GP may not be noticed due to the very high sensitivity exhibited by the OSCAR series spacecraft receivers. The GP can be mounted almost anywhere without difficulty, preferably above existing structures; an outrigger from the existing ham tower; a pole stuck in the backyard; a fence post; the eaves of the house to mention a few.

From two metres, up in frequency or down in wavelength, the GPs are not very visible, especially if painted sky-blue. I make this point in case the intended operation is to be in a neighbourhood of grouches or if an apartment type of operation.

Building the GP involves a minimum of material. Brazing rod is the author's mainstay for such projects. Plain copper wire will work, however flimsy. For a ten metre GP, a modified CB antenna will work great plus they are already of proven design and inexpensive. Used ones are readily available for little or nothing. For the higher frequencies, as previously mentioned, a coax fitting can be used for the hub. Then radials, at least four, can be soldered to the fitting and the radiating element to the centre conductor. The plane may also be made of a circular sheet of aluminium or formed into a cone in order to achieve the degree of matching desired.

A derivation of the GP is the 5/8 wavelength radiator. Several advantages are available in this configuration. The first being an approximate 1.8 dB gain over the conventional GP or almost the same gain as a vertical dipole. Secondly, a slightly lower angle of radiation which is the reason for the increased gain; thirdly, and possibly the most attractive feature, is the radiating element may be affixed directly to the radial system, plane or mounting device. Part of the radiating element is wound into a three turn coil. The centre conductor of the coax is tapped to this coil and soldered in place at the point where the lowest obtainable VSWR is measured on the intended frequency of operation. Brass or copper rod/tubing will work well in this application. Steel rod is hard to work with and equally difficult to solder to. With a little torch work, stainless steel can be used and would weather the best. To keep weather out of the coax, tin the braid before affixing it to the counterpoise and saturate the open end with Glyptal or seal it with Selsatic Rubber. The 5/8 wavelength antenna may also be built on a female bulkhead coax fitting if desired.

The dipole antenna is a centre fed half wavelength radiator. Its characteristic impedance is 72 ohms. It is generally utilised in a horizontal configuration, some applications may necessitate its vertical usage. Horizontally it is a bi-directional radiator; vertically it's omni-directional with a low radiation angle. The dipole when used in the HF region and constructed of wire requires two structures for support. Vertically it may be mounted to a single structure preferably wooden or other non-metallic material in order to reduce pattern distortion. Coax feed is the normally applied method, but 72 ohm ribbon is available from Belden Cable Company. In the application of a folded dipole, 300 ohm TV twinlead is readily available and inexpensive.

A dipole may be constructed of wire, tubing, brazing rod, flat stock, whatever may be available. In the category of VHF/UHF dipoles, construction may be on, again, a coax fitting. Baluns may be added,

but for the sake of simplicity are not required.

Mounting a dipole .25 wavelength above a sheet of aluminium that, on a side, is 5% greater than the length of the dipole yields a system of 3 dB more gain than a dipole by itself, and becomes unidirectional. The configuration makes it a handy, portable antenna for 2 metres or 70 cm. It does not have quite the aperture (capture area) required for very weak signal reception but for OSCAR work it performs quite well.

A derivation of the dipole antenna is the "Turnstile". This comprises two dipoles perpendicular to each other and fed through a 1/4 wave coaxial balun. The result is a cloverleaf pattern effectively doubling the aperture and enhancing the propagational properties. The "Turnstile" may also be mounted above a reflector previously mentioned with the dipole. The dipole configurations exhibit a slightly greater tolerance to frequency excursions than the GP. The order of $\pm 12-15\%$ should not raise the VSWR over 2:1 especially at 145 MHz and above. Unless the VSWR is extremely high, it won't be all that noticeable because of the feed line loss. The best policy is to cut the dipoles for the frequency to be most used and don't worry about occasional frequency and accompanying VSWR excursions.

At this point I'd like to introduce a frequency independent antenna, the Discone. The main advantage of this type of antenna for satellite communications is it may be used for uplinking on one bird and downlinking on another. An 8:1 frequency range with the VSWR remaining below 1.5:1 can certainly be appreciated by those of us who don't have a great deal of room for varied multiple arrays. The Discone is fix-mounted with ease and simplicity incorporating a small diameter centre pole. It is omni-directional and vertically polarised. The feed-point arrangement is such the 50 ohm coax is used. The material needed in the construction of this antenna requires nothing fancy. Brazing rod and hardware cloth (copper screen) plus a suitable insulating material, preferably Teflon, is all that need be used. Such a large frequency range doesn't require the crowding at the bottom end of the design band. In most cases this antenna will be built for 2 metres as the bottom band. A rule of thumb is to drop the design frequency 20% below the lowest frequency you intend to use. Even to use 100 MHz as the design frequency allows the coverage of three ham bands, two of them common to the present OSCAR series. The space required for this antenna is less than two cubic feet. This isn't too large to be used on an apartment dweller's balcony.

Construction details are not the subject of this article, however, dimensions are available in Bill Orr's *Radio Handbook* and

Henry Jasik's *Antenna Engineering Handbook*.

Last, but not least, let's look at the Yagi antenna for satellite operation. The Yagi is narrow-banded but a derivation of the Yagi, the "Log Periodic", which I will discuss later, is frequency independent. Similar in band-width to the Discone, the Yagi is unidirectional having a front to back ratio of 15-25 dB depending on the number of elements and their spacing. As a basic antenna let's consider a three element Yagi on 2 metres. The boom is approximately 2 feet long. The longest element (reflector) is approximately 40 inches. A gain of 4.5 dB is obtainable over a dipole. It would require a little over 2 feet for turning radius. A light weight TV rotor would be adequate. For best results a fixed tilt angle of 30 deg. is suggested unless elevation control is contemplated. The boom can be wood or metal, the elements aluminium tubing, but stiff clothes line wire will work fine. A variety of match-

ing systems may be used. This is left to the constructor's preference. Myself, I'd use a matching system that allows the use of coax for the sake of simplicity.

As we progress higher in frequency, the Yagi becomes smaller allowing us to add more elements and still conserve space. A word of caution — the more elements, the longer the boom, the sharper the beam-width, lots of time spent in repositioning (manual tracking), i.e., reduced operating time. In the embryo stages of your satellite communicating, the emphasis should be on operating, not pin-point tracking.

The "Log Periodic" type of Yagi is independent of frequency over about a 10:1 range. This type of antenna allows multi-band operation with one antenna and without the compromises of traps. The LP requires no special type of match since one-half the composite boom is feed (hot) along with all the elements on that boom

half. The second half acts as a balun plus supports the other assembly of dipole halves. Here again economy is stressed. The elements may be clothes line wire or aluminium heli-arc rod swaged into holes in the two-piece main boom structure. Even though the LP has a lot of elements, the gain on any one frequency will not be more than a three element Yagi. In operation, the LP has one element that resonates at the frequency of operation, a longer element behind acting inductively as a reflector and forward element acting capacitively as a director.

I hope to have inspired some of you who have thought about satellite communications to try it. Contrary to some erroneous belief, large steerable arrays are not needed and high power is for the most part wasted. I used as little as 0.5 watt to set the world distance record, so I'm sure you can do a lot with 100 watts to a GP, dipole, Discone or turnstile. Let's hear you via OSCAR. ■

THE YOUTH RADIO SERVICE IN N.S.W.

THE YOUTH RADIO SERVICE IN N.S.W. WHAT IS THE Y.R.S.?

The Youth Radio Service is a service of the Wireless Institute of Australia, and was formed to further the Institute's educational aims. It was originally a confederation of Radio Clubs, mostly involved with young people starting out in Radio, but now caters for people of all ages looking for help in studying Amateur Radio, so the term "Youth" is now only partly correct. Thus we often term it the Y.R.S. Education Service.

The Y.R.S. meets annually, and member clubs determine policy and elect an executive committee to carry out the aims of the service throughout the year. The present executive is:

State Supervisor: Ken Hargreaves VK2AKH, 52 Marlin Avenue, Floraville, 2280.

Education Officer: David Wilson VK2ZCA/NMW, 63 Superior Avenue, Seven Hills, 2147.

Treasurer: Rex Black VK2YA, 10 David Street, East Springwood, 2777.

1. To Member Clubs

- A system of progressive syllabuses and examinations in elementary radio. Attractive certificates are awarded to successful candidates.
- The regular publication "Superbull" — the SUPERvisors' BULLetin with club news, circuits, and instructional ideas.
- The national quarterly bulletin of the YRS — "Zero Beat".
- A component shop service, supplying components specifically useful for small club-type projects.

To register your club with Y.R.S. costs \$3 per year, and this fee should be sent to the Treasurer, Rex Black, together with your club's name, and the leader's or Secretary's name and address.

2. Services to all Clubs and Individuals Y.R.S. has available for purchase notes and tapes of use to anyone starting out in radio, or striving for the novice licence.

Materials available are:

- *Y.R.S. elementary notes, stage 1.* — For those who haven't a clue about radio at all. Simply presented in digestible stages. If you can read, this will help give you a start. 48 pages, quarto.
- *Y.R.S. elementary notes, stage 2.* — So you handled the Stage 1 alright? Here's some more. Simply written and illustrated. Takes you through components and simple circuitry. 38 pages f'cap.
- *1,000 questions for Novice Licence Candidates.* — Want to walk into that novice theory and regs. exam with confidence? This book has 1,000 multiple choice questions, pitched at what we believe is novice level. Arranged under topics similar to the Westlakes Manual, with additional sections on interference, 150 questions on regulations, and a sample novice-style paper. A key to answers is provided, of course. 120 pages quarto.
- *Learning the Morse Code* — by Rex Black VK2YA. Has been teaching Morse since the R.A.A.F. days during the war. This is the companion book to Rex's two C-60 tapes teaching novice Morse code. Jam-packed with advice, instruction and reasons why the Morse code is easy to learn. 32 pages quarto.
- *Novice Morse Cassettes.* — The two C-60 tapes that go with the book. The tapes are arranged in 20 steps which include 83 individual practices. Equally useful for an individual studying, as for an instructor who would rather teach with a tape.
- *Morse Code Copying.* — We have a range of tapes, starting from "Introductory"

to speeds ranging in value from 5 words per minute to 12". Each tape covers one speed, and all (whole number) speeds are available to be copied.

What you do is send your tape in, together with 36c worth of stamps to Fred Santos VK2NDN, 8 Cooper Avenue, Blacktown 2148, and Fred will dub on to your tape.

COSTS INVOLVED

Elementary Stage 1 — \$1.00 posted or 60c plus post in bulk.
Elementary Stage 2 — \$1.00 posted or 60c plus post in bulk.
1,000 Questions — \$3.00 posted or \$2.50 plus post in bulk.
Learning Morse Code (book and 2 cassettes) — \$6.50 posted.

THE SELF-STUDY KIT

Contains: Westlakes Manual, Elementary Stage 1 Notes, 1,000 Questions, Learning Morse Code Book, 2 cassettes, PLUS study guide containing the address of a qualified amateur who will help you through a problem or two (or more).

THE KIT FOR \$15.00 POSTED!

DID YOU SAY YOU ALREADY HAD THE WESTLAKE MANUAL? WELL . . . THE KIT WITHOUT WESTLAKE MANUAL FOR \$12.00 POSTED.

WHAT'S COMING?

We are always looking for new ways to help people onto the air. We also want to help school Technics and Electronics classes.

50 circuits — tried and tested — clear and simple. Coming up soon.

The novice course on cassette — We're working on it. Could it be a learn-as-you-drive, or even a learn-as-you-sleep? Watch for this one.

Novice by correspondence — Another one we're working on.

WE CAN USE HELP TOO — IF YOU'RE AN AMATEUR AND WOULD LIKE TO HELP, OR EVEN JUST OFFER IDEAS — WE'RE INTERESTED! DROP US A LINE. ■

REMEMBRANCE DAY CONTEST OPENING ADDRESS

Opening address by Mr. H. S. Young for the 30th RD Contest 1977

(Mr. H. S. Young has recently retired from the P. and T. Department, Radio Frequency Management Branch, having held the post of Assistant Secretary, in charge.)

It is a privilege indeed to have been given the opportunity to open your Remembrance Day Contest for this year.

Of the various contests that are open to members of the Amateur Service in this country, this particular one is surely of special significance in that it serves to remind us that there have been periods in our telecommunications history when we have had to temporarily shelve the practice of amateur radio and instead take up arms in the defence of our country.

The worth of the amateur radio operator in times of hostilities, with his broad understanding of telecommunications technology, and practical operating experience, has been amply demonstrated, and is no doubt appreciated in the Defence area, as well as by members of the community at large.

Unfortunately, it is one of the sad facts of war that casualties are inevitable and of course Australian amateurs serving in the Armed Forces have suffered in this regard.

It is to these men that we should direct our thoughts on the occasion of the Remembrance Day Contest.

What better way of revering their memory and expressing our gratitude for the sacrifices they made, that we may be permitted to pursue our various interests in a free society, than by participating in a competitive exercise in the very communication medium which in life they knew so well.

As you participate in this Contest you will doubtless be conscious of the fact that there are a number of countries whose administrations do not condone amateur radio activities at all. I believe we can indeed count our blessings in this regard.

In these days, when heavy pressure is being brought to bear by some Administrations for greater radio frequency spectrum,

it is not so surprising that some overseas countries consider the amateur service as one rating a very low priority in the allocation of spectrum, if indeed, any at all. It goes without saying, of course, that in such circumstances the Australian amateur movement must remain ever watchful of the influence that such people can bring to bear, especially in the international forum that decides these issues.

It is surely important for the amateur service to continue to be seen, in the eyes of the various communities throughout the world, as one forming a particularly useful part of our human society. A service which is also capable of providing a noteworthy contribution to education in radio communication technology, as well as practical communication expertise.

I believe that competitive contests such as the one you are about to commence are a worthwhile contribution towards achieving this end.

And now I know you are all anxious to commence operating in your contest, so I should just like to conclude by saying "thank you for listening", and that it gives me a great deal of pleasure to declare this, your 30th Remembrance Day Contest, open.

Good luck and happy hunting to you all.

WIA CORRESPONDENCE

Postal and Telecommunications Department

G.P.O., Box 5412CC,
Melbourne, Vic. 3001.

Secretary,
Wireless Institute of Australia,
517 Toorak Road,
TOORAK, VIC. 3142.

Dear Sir,

I refer to previous correspondence advising of the temporary withdrawal of the use frequency band 26.96-27.23 MHz by the Amateur Radio Service to accommodate the Citizens' Radio Service and of the arrangements made for the use of the band 28.1-28.6 MHz by the Novice Amateur Service.

It was recognised, of course, that certain Novice Amateur station licensees could perhaps suffer some immediate disadvantages as a result of the withdrawal of the band concerned because of the need to purchase new equipment or, where practicable, to have their existing units modified.

Accordingly approval was sought and has been obtained from the Minister to a proposal that any existing Novice Amateur radio station licensee who was so disadvantaged and who desires to participate in the Citizens' Radio Service (CRS) may be granted a special licence to cover participation in both the Novice Amateur service and the CRS. The annual fee for such a licence has been set at the normal rate for a CRS station licence, namely \$25.

It would be appreciated if you could see your way clear to arrange for the new provision mentioned to be publicised through the Institute's normal channels please. The new special licences will be available from Offices of the State Superintendents, Regulatory and Licensing, of the Department.

Yours faithfully,
D. WILLIAMSON,
First Assistant Secretary,
Radio Frequency Management. ■

AWARDS COLUMN

Brian Austin, VK5CA
P.O. Box 7A, Crafers SA, 5152

WALA (Worked All LA)

This certificate is offered by the Norsk Radio Relæ Liga (Norwegian Radio Relay League). The following conditions must be met:

1. All contacts with LA/LB stations made after 1 January 1950 are valid.
2. Applicants must produce evidence of contact with 20 different LA/LB stations on any amateur band. At least 6 of these stations must be situated north of the Polar Circle. The location must be clearly indicated on the QSL card. Special rules for amateurs of Scandinavia are printed and published in Norwegian.
3. Contacts on CW or phone or mixed are allowed. Minimum reports required are RST 333 or RS (M) 33 (3). Crossband contacts are not allowed.
4. Contacts with stations with prefixes JW (Svalbard and Bear Island) and JX (Jan Mayen) count for the certificate.
5. The application, including a list of the stations worked, showing date and time, signal reports, frequency, mode and QTH, plus the QSL cards should be sent to:
NRRL Award Manager,
Hans E. Kinck, LA4YF
3800 B0 1 Telemark
Norway.

* A fee of 10 IRCs must be included with your application.

A list of counties (fylke) and county numbers follows:

NORWAY

County/Letter County/Fylke

- | | |
|---|------------------|
| A | Oslo (City) |
| B | Oslofjord |
| C | Akerhus |
| D | Hedmark |
| E | Oppland |
| F | Buskierd |
| H | Telemark |
| I | Aust-Agder |
| K | Vest-Agder |
| L | Rogaland |
| O | Bergen (City) |
| R | Hordaland |
| S | Sogn og Fjordane |
| T | More og Romsdal |
| U | Sor-Trondelag |
| V | Nord-Trondelag |
| W | Nordland |
| X | Troms |
| Y | Finnmark |
| Z | Vestfold |

OVERSEAS TERRITORIES

- | | |
|----|-----------------------------|
| JY | Bouvet Island, Peter Island |
| JX | Jan Mayen |
| JW | Svalbard |

County letters are in use as the criteria of the WALA Certificate for Scandinavian stations.

(WRN)

R-10-R

Work with the radio stations of 10 radio amateur regions (R-10-R) is issued to all licensed radio amateurs and SWLs who fulfill the following conditions:

QSP

LET'S QSY TO CP-LAND

The Radio Club Boliviano reports complete understanding between themselves and their Director-General of Telecommunications, with a cordial relationship and mutual respect so that any transactions, including the granting of licences, revalidations or upgrades are completed within 48 hours. Another aspect of these relations is that the Club's Board of Directors receives preferential treatment, namely that when an interview is requested it is granted immediately and the matters submitted for consideration are resolved within a spirit of great understanding. From IARIU R2 News November 1977.

1. Contact one amateur in each of the 10 Soviet Union call areas during a period of 24 hours. Prefixes such as UA2, UC2, UP2, UQ2 and UR2 are all the same call area.

2. All contacts must be either all CW or all PHONE.

3. All contacts must be made since 1 July 1958.

4. Minimum reports shall be RST 337 or RS 33.

Applications must include the list of contacts with date, calls, type of emission, frequencies and a fee of one rouble or 14 IRCs. The QSL cards are required to be sent along with the application. Send your application to:

Central Radio Club
P.O. Box 88
Moscow, USSR.

(WRN)

I am always on the lookout for new awards, or old ones which few of us have ever heard about. Send any information to Brian W. Austin VK5CA, Federal Awards Manager, WIA, P.O. Box 74, Cafers, SA 5152.

NEWS FLASH

Word has just been received from the IARU that Worked All Continents Certificate has been issued to Len Poynter VK3NAC.

This should be the first VK Novice W.A.C. Congratulations, Len.

AROUND THE TRADE

AMERICAN ELECTRONIC LABORATORIES LOW PASS FILTERS

American Electronic Laboratories, Inc. (AEL) presents the FLD1000 series of low pass filters, which are eleven element elliptic function filters with chebyshev response in both the pass band and stop band). These filters operate in the cut-off frequency range between 1 MHz through VHF.

With a size of less than 3 in. by a depth of only .56 in., a width of .75 in. combined with a weight of only 1.5 ounces (approx.), this filter is easily integrated into circuits. SMA female connectors are standard.

Further information is available by writing to: Scar Distributors Pty. Ltd., P.O. Box 48, Kilsyth, Vic. 3137.

DIPOLE ARRAY ANTENNA 20-1000 MHz

American Electronic Laboratories, Inc. (AEL) offers technical information on two models in its line of coplanar log periodic dipole array antennas.

Models APN1509 and 1202A cover the 20 to 100 MHz frequency range. They both feature a detachable dipole element assembly for tactical utilization of the antenna. Model APN1509 consists of snap-on dipole elements. The APN1202A elements are bolted in place.

Both antennas meet the requirements for testing in accordance with SAE specification J551 on electro-magnetic interference.

The APN1509 and 1202A weigh approximately 70 lbs. and measure 13 ft. by 15.75 ft. assembled.

Data sheet No. 28-8 can be obtained by writing to: Scar Distributors Pty. Ltd., P.O. Box 48, Kilsyth, Vic. 3137.

AUTOMATIC TUNER

Hatfield Instruments announce the release of their "Servomatic Antenna Tuning Unit Type 7550", a completely automatic tuner having infinitely variable adjustment for maximum power transfer from a 50 ohm output transmitter to a whip or long wire antenna between 5 and 40 metres in length.

Features include automatic re-tuning should the geometry or environment of the antenna change; no expensive multi-way cables required between the transmitter unit and tuning unit; no restriction in frequency range between 1.6 and 30 MHz or dial setting.

Power rating: 50 watt with overload factor to 100 watt.

Frequency range: 1.6 MHz to 30 MHz.

Output impedance: 25-3000 ohms resistive \pm jW 2000 ohms continuously variable.

Resolution time: Maximum 10 seconds. Typically 4 seconds.

Input power: 12/32 volts DC.

Temperature range: -20° to +40°C.

Dimension 265 x 422 x 248 mm, excluding connectors and handle.

Contact Scar Distributors Pty. Ltd., 18 Shelley Avenue, Kilsyth, Vic. 3137.

MAGAZINE INDEX

Syd Clark, VK3ASC

BREAK-IN September 1977

Fundamentals of Digital Frequency Synthesizers for the Two Metre Amateur Band; Panel Indicator-Battery Indicator; Coupling Networks; A simple Adjustable Power Supply; Visual CW; A Soliloquy on Aerials.

BREAK-IN October 1977

A Soliloquy on Aerials; Another Answer to the Mast Problem; Printed Circuit Board Layout for the ZL2AOM Transceiver; Carrier Balance Meter; Fundamentals of Digital Frequency Synthesizers for the Two Metre Amateur Band; World Problems in Radio Communication: Pt. 3.

RADIO 25 August 1977

Mobile Radio Communication: A Reliable and Inexpensive Power Supply System for Remote Mountain-Top Repeater Stations; Roll Your Own or Insulators in Epoxy; A Multi-Band End-Fed Inverted-Vee Aerial System.

QST August 1977

Phase III: Toward the Ultimate Amateur Satellite; A Delayed Brake Release for the Ham; A Novel Antenna Installation for a Sailboat; Using a Frequency Counter as a Capacitance Meter; Solar-Electric Power and the Amateur; Designing Solid-State RF Power Circuits; Updating the Noise Blanker; A Crowbar-Proof 12V Power Supply; Know Your Receiver: Active Low-Pass Filters for CW or SSB; Mark 40 and Still Going Strong; Twisters Take Tolls — Hams Hurry Help; The French Atlantic Affair.

QST October 1977

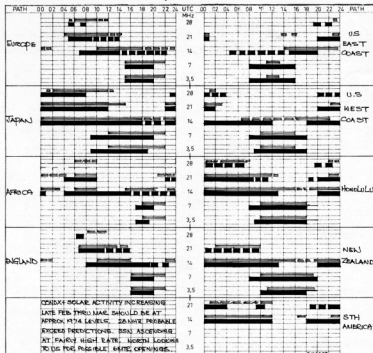
Measuring Antenna Gain with Amateur Methods; Optimizing Vertical Antenna Performance; Designing Solid-State RF Power Circuits, Pt. 3; The Emergency Broadcast System: An Extended Frequency Range for the Collins 75S-1; Printed Circuit Boards — An Easier Way; The Gentlemen's Band — 160 Metres; Morse Code to ASCII Translator; Using a Microcomputer; The Zany Zener; Build a UTO-1; Update your OSCAR20HC — and Your Amateur Radio Library; 20th Jamboree-on-the-air.

RADIO COMMUNICATION October 1977

Power Supply and Control Circuits for a 4CX250B Amplifier; A Multi-mode Transceiver Using SL1600 IC's; A Solid-State 1.8-3.5 MHz Receiver; Further Notes on the DS81 Mk. 2.

IONOSPHERIC PREDICTIONS

Len Poynter VK3ZGP/NAC



LEGEND

FROM WESTERN AUSTRALIA

FROM EASTERN AUSTRALIA

BETTER THAN 50% OF THE MONTH, BUT NOT EVERYDAY

LESS THAN 50% OF THE MONTH

ALL TIMES UNIVERSAL UTC (GMT)

PREDICTIONS COURTESY IPS, SYDNEY

THE NEW TS 520S



KENWOOD

...pacesetter in amateur radio

A NEW STANDARD IN ECONOMY TRANSCEIVERS

Full coverage 1.8 to 29.7 MHz * Outstanding Receiver Sensitivity and Minimum Cross Modulation * Vernier Tuning for Plate Control * Highly effective Noise Blanker * New Improved Speech Processor * RF Attenuator * Easy connection to Phone Patch * Fully compatible for optional 6-Digit Read-out * Price: TS 520S **\$685**

KENWOOD TS 820S HF TRANSCEIVER

The pacesetter, provides superior performance, versatility and features found in no other Transceiver **\$1100**

KENWOOD TR 7400A FM VHF TRANSCEIVER

Full 4 MHz coverage, 25 watts high, 5 to 15 watts low, offset for Repeater. Fully synthesised, 6-Digit Read-out **PRICE \$425**

KENWOOD TS600 VHF TRANSCEIVER

Matching in size and performance to the TS700A, coverage 50 to 54 MHz. SSB/FM/AM/CW. **PRICE \$650**

ICOM MODELS	IC - 22S	PRICE \$265
	IC - 245	PRICE \$440
	IC - 245 (with SSB adaptor)	PRICE \$550
	IC - 211	PRICE \$750

YAESU MODELS	FT 101E	PRICE \$850
	FL - 2100B Linear	PRICE \$565
	FT - 301S - FT - 301D - FRG7	

ALL PRICES SUBJECT TO CHANGE WITHOUT NOTICE
ONWARDS forwarding. Please add sufficient for freight or postage, excess will be refunded.

FOR AMATEUR EQUIPMENT BASED ON COMPETITIVE PRICES, PHONE OR WRITE TO:-

Amateur Electronic Imports

P.O. BOX 160, KOGARAH. N.S.W. 2217
TELEPHONE: (02) 547-1467
CABLE: "AMATEURIMPORT, SYDNEY"

INTERSELL ELECTRONICS PTY. LTD.

Swan 700CX SS16B	\$699	Mobile Antennas 20 mx	\$20
230X PSU	\$125	Mobile Antennas 40 mx	\$22
Secondhand 700CX SS16B	\$499	Spare stainless steel whips	\$9
TB2A Two element triband beams ...	\$145	Heavy duty mobile antenna bases ...	\$16
WM1500 Wattmeters (0/1500 in 4 steps)	\$65	Shure 444 Mike inserts	\$10
Shure 444 Mikes	\$49	Tubes 6HF5	\$10 each
SWRIA Twin Meter SWR Meters	\$25	Most other tubes for Swan Transceivers	\$2.50 each
FSI Field Strength Meters	\$15	Except 6JH8	\$5.00 each

All prices quoted are subject to changes without notice, but are inclusive of Sales Tax. Freight and Insurance extra.

SOLE AUSTRALIAN DISTRIBUTORS FOR SWAN AMATEUR AND COMMERCIAL RADIO EQUIPMENT

VK2AHK 3 MIDSON ROAD, OAKVILLE, N.S.W. 2765 - Phone (045) 73 6215

UHF for the Amateur...

ALL FULLY IMPORTED FROM THE U.K.

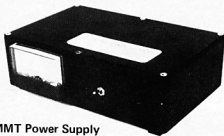


MMT TRANSVERTERS

MODEL MMT 432/144 PRICE: \$260

MODEL MMT 432/28'S' PRICE: \$235

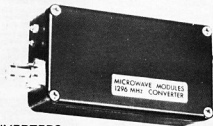
70cm



MMT Power Supply

Matching units for MMT series transverters.

PRICE: \$94

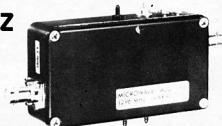


CONVERTERS

MODEL MMC 1296/28 PRICE: \$65

MODEL MMC 1296/144 PRICE: \$65

1296mhz



VARACTOR/TRIPLER

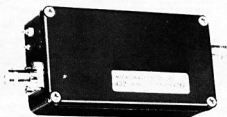
MODEL MMV 1296 PRICE: \$74



CONVERTER, with Oscillator Output Facility.

6 METER MODEL 52/28LO PRICE: \$49

2 METER MODEL 144/28LO PRICE: \$49



CONVERTERS

70CM MODEL 432/28 PRICE: \$51

70CM MODEL 432/144 PRICE: \$51

2 METER MODEL 144/28 PRICE: \$45



500 MHZ COUNTER

MODEL MMD050/500 PRICE: \$175

PRESALER

Divide by 10, 500 MHz. Module only, no case PRICE: \$44

TRANSVERTER MODEL MMT144/28 PRICE: \$185

BNC Connectors, imported from U.S.A. PRICE: \$1.85 each

BNC connectors, imported from U.K. PRICE: \$1.35 each

ALL PRICES SUBJECT TO CHANGE WITHOUT NOTICE

ONWARDS forwarding. Please add sufficient for freight or postage, excess will be refunded.

Australian Distributors for Microwave Modules Limited, U.K.

Amateur Electronic Imports

P.O. BOX 160, KOGARAH, N.S.W. 2217
TELEPHONE: (02) 547-1467
CABLE: "AMATEURIMPORT, SYDNEY"



GET THE BEST FOR LESS FROM GFS

GREG WHITER
VK3CA

EMOTATORS ROTATORS

MODEL 902CXX Heavy duty.
Rotation torque — 600 Kg/cm
Brake torque — 4000 Kg/cm
Only \$196.

MODEL 103LXX Medium duty.
Rotation torque — 450 Kg/cm
Brake torque — 1500 Kg/cm
GFS Price only \$140

OUTSTANDING NEW MINI TRANSCEIVER FROM YAESU MUSEN

AVAILABLE AT GFS.

FT-7

FEATURES:
Modern compact styling for easy under-dash mounting.
Size 220mm x 100mm x 200mm.
90 to 10 metre operation.
VFO controlled.
Noise Blanker that really works.
Facilities for fixed channel operation.
Ideal for the shack or the mobile at a price that you can afford.
Only \$548 including mobile mount, microphone and cables.

HIDAKA MODEL VS 22
10 and 15 metre Duo band
3 element yagi. Our price \$158

FRED SWART
VK3NBI

Sick of yelling your head off at those rare DX stations while others are getting 5/9 reports from them? Then get with 117 Swiss Quads from GFS give a forward gain of 14 dB, a front to back ratio of 26 dB and QSO's galore.

20 metre Swiss Quad	— \$245
15 metre Swiss Quad	— \$127
10 metre Swiss Quad	— \$118

Look at this! Where do you get an 80 to 10 metre trapped vertical antenna complete with guy ropes and radial traps for only \$103? At GFS of course. *

LOOK AT THESE PRICES AND COMPARE!!

FT-101E	160-10m x 250W Tcr	\$829
FT-301	160-10m x 200W Tcr	\$868
FT-301S	160-10m x 25W Tcr	\$839
FT-7	80-10m x 25W Tcr	\$548
TS-520S	160-10m x 250 W Tcr	\$609
FL-110B	80-10m x Linear Amp	\$329
FL-110	160-10m x Linear Amp	\$229
FRG-7	0.5-29.3MHz Comm Rx	\$319
YO-301	301 series Monitorscope	\$389
YO-100	101 series Monitorscope	\$253
YP-150	Dummy Load/Wattmeter	\$ 94
FP-301	301 series 20Amp PS	\$159



FRG-7

IF YOU WANT TO PURCHASE A NEW RIG BUT FEEL THAT YOU DON'T HAVE THE READY CASH, ENQUIRE ABOUT OUR FINANCE PLAN.



FL-110

ACCESSORIES FROM GFS

FS-600A peak reading in-line SWR and power meter, 1.5 to 30MHz — \$72.
QTR-24 24 Hour World Clock — \$31.
50-FB low loss double shielded foam dielectric Co-ax, 2 dB loss per 100 ft. at 100MHz. \$1.20 per metre.
LP-39 low pass filter, 50W power capability. Ideal for novice use — \$9.50.
VS-1 mini mic compressor, 40dB of compression — \$25.
MC-801 Katsuni mic compressor — \$45.
SWR-15 SWR/Field strength meter 3.5 to 150MHz — \$15.50.
SWR-200 Colour Black SWR/Power meter 1.8 to 150MHz — \$69.



FL-2100B

AND MORE TO COME LATER !!

GET THE BEST FOR LESS FROM G.F.S.



YP-150

GFS — GREG AND FRED'S SERVICE
MANY YEARS OF EXPERIENCE IN THE AMATEUR RADIO AND COMMUNICATIONS SERVICE INDUSTRY PROVIDES US WITH THE BACKGROUND AND KNOWHOW TO OFFER YOU THE BEST IN SERVICING AND OUR \$9.50 PER HOUR SERVICE RATES ARE VERY HARD TO BEAT. SO WHY PAY MORE?

NEW! COMBINATION FREQUENCY COUNTER AND SIGNAL GENERATOR — DX 5550



Technical Data:
10kHz to 200MHz counter.
0.4 to 30 MHz generator.
600Hz tone oscillator.
2mS and 200mS gating time.
9 Digit LED display.
Switchable KHz and MHz readout.

Featuring a 220 MHz counter upper limit and 30 MHz generator upper limit.
Generator frequency is read directly on the counter.
A MUST FOR EVERY HAM SHACK.
\$209

Freight and Insurance extra. 90 DAY LIMITED WARRANTY APPLIES TO ALL EQUIPMENT BUT DOES NOT COVER FINAL TUBES OR SEMI-CONDUCTORS. PRICES AND SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

G.F.S. ELECTRONIC IMPORTS 15 McKEON ROAD, MITCHAM, 3132. (03) 873 3939

BUYING WHOLESALE?

Keep us in mind when you call for quotes. It can pay to talk to us because we care and we are also stockists of a wide range of components and materials.

ELECTRONIC (Distributors)

(Wholesale Division of Electronic Enthusiasts Emporium)

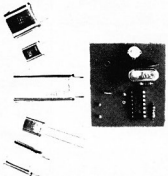
223 POST OFFICE ARCADE
JOYCE STREET
PENDLE HILL, N.S.W. 2145
TEL. (02) 636 6222

TO COMPLEMENT OUR USUAL RANGE OF CRYSTALS

BRIGHT STAR CRYSTALS PTY. LTD.

35 EILEEN ROAD, CLAYTON, VIC., 3168. Phone: 546-5076 (Area Code 03)

CAN SUPPLY A RANGE OF —



- OSCILLATORS
- WIDE-BAND AMPLIFIERS
- TTL & CMOS DECADE COUNTERS
- ELECTRONIC CRYSTAL OVENS

INTERSTATE AGENTS:

Adelaide: ROGERS ELECTRONICS — Phone 42 6666
Brisbane: FRED HOE & SONS PTY. LTD — Phone 47 4311
Perth: COMMUNICATION SYSTEMS — Phone 76 2566
Hobart: DILMONT INSTRUMENTS — Phone 47 9077

All Mail to be addressed to: P.O. BOX 42, SPRINGVALE, 3171

LOOK INTO THE ULTIMATE



VOX: Voice — activated mike circuit is built into the TS820. All vox controls up front.

NOISE BLANKER: Crystal filter circuit is highly efficient in eliminating pulse noises.

RF MONITOR: lets you hear your own transmission. Also useful for adjusting RF processor

IF SHIFT: (Pass-band tuning) varies IF passband without changing receive frequency—lets you eliminate unwanted signals. RIT lets you vary receive frequency 5k Hz either side of VFO.

VERNIER: Plate tuning control has vernier for fast precise tune-up adjustment.

HEATER: lets you turn off tube filaments on receive only. TS820's solid state circuit draws less than most car dash lights.

DIGITAL READ-OUT. (Optional) Clear blue readout on receive and transmit. Mixes carrier, VFO and 1st het frequencies.

THE BREATHTAKING KENWOOD TS-820 PACESETTER HF TRANSCEIVER

You command the band with our Kenwood TS820. Superb phase lock loop circuitry allows highly accurate frequency derivation without introducing spurious signals. You can switch sidebands (USB, LSB, CW) without recalibrating, too!

Kenwood's exclusive FET-based VFO gives high stability under all conditions. If you'd like to know more, just mail the coupon today.

WHEN YOU WANT TO MOVE UP:



TV506: 6MTR band transverter



SP-520: 80hm external speaker



VFO820: Remote VFO 5.0 — 5.5 MHz



TV502: 2MTR band transverter

Contact your nearest Kenwood dealer or Weston Electronics direct



KENWOOD

MARKETED IN AUSTRALIA BY WESTON ELECTRONICS COMPANY, FOR TRIO KENWOOD CORPORATION, JAPAN. HEAD OFFICE: 2 THE CRESCENT, KINGSGROVE, N.S.W. 2208.

COUPON

CALL SIGN

NAME

ADDRESS

Postcode

Phone

AMATEUR SATELLITES

Bob Arnold

VK3ZBB

The latest information received from HAI JA1ANG the Amateur Satellite Coordinator via Charlie VK3ACR is that the launch date of OSCAR D is now set at 5th March, 1978. We also hear that the Russian series of satellites have been delayed and will be launched "sometime in 1978".

In the hope of obtaining some authoritative information on the RS series I have been in communication with the Ambassador of the USSR in Canberra. His Excellency tells me he has sent my request to Moscow and I await further information with interest.

During November and December, Mode B of OSCAR 7 has been intermittent and quite disconcerting for its loyal band of operators. The cause of the unprogrammed switches to Mode A has been overloading of the transverter by European stations which in turn causes excessive battery drain within the satellite. I had heard of this problem in the UK and the lack of response from at least two stations when requested to operate in a reasonable fashion. Despite this lack of available orbits, the following new stations have been heard on Mode B: VK2ZTA, VK3YFU, ZL3THM, ZL3AAD, VK2BIE.

Dave Hull VK3ZDH, who operates the Australian Command Station for OSCAR reports that during November he made a vigorous attempt to switch on OSCAR 6. Unfortunately, this effort was to no avail and it must now be presumed that the satellite is permanently inoperative.

This information has been confirmed by others, so after 56 months of operation, OSCAR 6 is quiet.

OSCAR 6 was launched from Vandenberg Air Force Base in California on 15th October 1972 and had a designed life of twelve months, and through the dedication of the command stations including our own Dave Hull, the four-year life was achieved.

OSCAR 6 achieved many distinctions, including:

- First Amateur Communications Satellite capable of responding to teletyped commands.
- First Amateur Satellite with dual frequency operation of 28.45 MHz and 435 MHz.
- First long life Amateur Satellite with regular two-way communication capability.
- The use of Codedstore for the automatic retransmission of a teletyped message.
- Used by many US educational institutions for classroom instruction.
- Used in the development of a downed-aircraft emergency location system (ELT) in a joint venture between the Canadian and United States Governments.

Discovery of the Inverted Doppler propagation mode using the 435 MHz beacon.

- Used in numerous tests involving transmission of medical data between medical institutions and field mobile to medical institutions.

Numerous propagation experiments have been conducted.

- Allowed regular communication between all continents involving over 100 countries.

First Inter-Satellite communication involving AMSAT-OSCAR 6 and AMSAT-OSCAR 7.

First transmission of meteorological data using 110 baud ASCT from a remote platform.

So, we say farewell to our friend and say a sincere Thank You to the designers of the venture, from Australia, Canada, Germany and the USA, together with those involved in the command operation of the satellite.

Last month I mentioned my purchase of a copy of "OSCAR A Through Radio Satellites" by Stratos Caramanollis the English language edition of which is distributed by the RSGB at £4.20 post free. The first six chapters of the book deal with the theory and practice of satellite operation including orbital geometry, satellite anatomy, fundamentals of communication and telemetry. These chapters give the reader a sound grounding in the basics of satellites which will be invaluable when considering our future programmes.

Chapter 7 gives a comprehensive review of the OSCAR series giving in one compact volume all the data necessary to evaluate past operating practices. Then follows considerable data to operate

amateur satellites ranging from frequency to orbital calculations.

Details are also given of the use of the OSCAR series for educational purposes, GPR tests, Slow Scan TV and data transmission. The book is amply illustrated with photographs and drawings and the basic mathematical treatment of the subject is quite easy to follow through worked examples.

Perhaps my own disappointment with this excellent book was the lack of treatment of practical antenna systems, and I have therefore, presented an article from Amstat newsletter on this subject which may answer many questions I am repeatedly asked. The article is published elsewhere in this issue.

OSCAR 7 ORBITAL PREDICTIONS, FEBRUARY '78

Date	Mode	Orbit	Time Z	Long.
01	B	14700	0152	84.0
02	A	14712	0051	68.0
03	B	14725	0146	82.4
04	A	14737	0045	67.3
05	B	14750	0139	80.9
06	A	14762	0039	65.7
07	B	14775	0133	79.3
08	A	14787	0032	64.1
09	B	14800	0127	77.7
10	A	14812	0026	62.6
11	B	14825	0120	76.2
12	A	14837	0019	61.0
13	B	14850	0114	74.5
14	A	14862	0013	59.4
15	B	14875	0107	73.0
16	A	14887	0007	57.8
17	B	14900	0101	71.5
18	A	14912	0001	56.3
19	B	14925	0055	69.9
20	A	14937	0054	63.4
21	B	14950	0048	68.3
22	A	14963	0148	81.9
23	B	14975	0042	66.7
24	A	14988	0141	80.2
25	B	15000	0035	65.1
26	A	15013	0135	78.7
27	B	15025	0029	63.6
28	A	15038	0129	77.2

For the benefit of those who wish to listen for or work through, OSCAR 7, the following table, used in conjunction with the above data, will give the approximate time of acquisition of the satellite in various locations for a range of evening passes.

TIME CORRECTION FOR ASCENDING NODES

Overhead	Add Minutes	100	98	96	94	92	90
180	Sydney	155	160	165-170	160-200	205-235	—
220	Melbourne	—	160	165-170	175-185	180-220	225-250
205	Adelaide	—	170	175-185	190-205	210-250	—
200	Hobart	—	—	155-160	165-170	175-190	195-225
					220-230		
185	Brisbane	155-160	165-170	175-195	200-215	—	—
225	Perth	190	195-200	205-215	220-270	—	—

IARU NEWS

WARC 79

The August '77 issue of the Telecommunication Journal noticed a resolution of the ITU Administrative Council that as WARC 79 will need to take account of technical advances, new services, more intensive use of the frequency spectrum and the use of higher frequencies than presently used and that a considerable amount of technical information will be required to ensure that the Conference achieves the best results, it was resolved to invite the CCIR to carry out the necessary studies and to arrange for a special joint meeting of CCIR study groups on 23rd October 1978 for a duration of four weeks as a Special Preparatory Meeting to provide technical bases for WARC 79.

2m DX RECORD

A new 2 metre DX record was set up on 8th October last during a spell of intense TEP observed on 6m. Initial CW contact was established on 145.9 MHz between VY5Z2 and LU1DAU whereafter both stations switched to SSB. The distance was 5044 km (3135 miles), both stations used 10-element cross-polarized Yagi's, the former station was operating portable with 200W input and the latter 100W input. At the end of the QSO VY5Z2 then worked LU7DJZ under similar conditions. Congratulations.

For each day of the month listed above, the GMT time is given at the time the satellite crosses the equator on the first pass for that day and the longitude is the position in degrees West of the meridian of that crossing.

For each subsequent pass over the equator, add 115 minutes to the time shown and 28.7 degrees to the longitude shown. Round off the longitude to the nearest 5 degrees — this figure is called the Ascending Node (AN).

Select the capital city nearest your position and find the AN in the table. Then read off the "Add Minutes" in the top row. Add this to the time calculated above and the result will give the time of satellite acquisition for the selected pass.

Looking at the overhead pass column, if the AN determined is less than that figure the pass will be East of you and if the AN determined is greater than the overhead pass, it will be to your West.

All evening passes are from South to North and are in sight for between 15 and 24 minutes depending on the AN.

For more accurate information and morning pass calculations, refer to Amateur Radio, October 1977.

Example:

For Melbourne 07 Feb. 78
Time 01.33Z Long. 79.3° Mode B.
For Pass No. 4
Time is 01.33 + 4 x 115 min.
= 01.33 + 07.40
= 09.13

Ascending Node is 79.3 + 4 x 28.7

= 79.3 + 114.8

= 194.1

Rounding off AN = 195

From Time Correction Table:—

For AN 195 Add 92 mins. (01.32)

Therefore, Time of Acquisition is ...

09.13 + 01.32

= 10.45 GMT

As AN 195 is less than but near to, the Overhead pass, the satellite pass will be East of Melbourne but high in the sky at its peak, and being near overhead will be in sight for almost 24 minutes. ■

REPEATERS

WESTLAKES REPEATER

From Westlakes Newsletter, Oct. 77

One of the most common gripes heard on the air about the Westlakes Repeater is the fact that it is out of service after two minutes. This is the reason that the repeater if often left idle for long periods without usage. Users just don't like timeouts under five minutes! This special feature is known as the Westlakes Waffle-Stopper and isn't there some.

No over should be longer than two minutes on any repeater. Always leave a pause between over for breakers. Let breakers in as soon as possible as they don't "break" for fun. Don't develop the fastest button finger in the west. If possible, go simplest as soon as contact is established. If you wonder why the channel seems dead when you call CQ, ask yourself whether you are a good operator or a waffler.

MT. GININI REPEATER ACCESS

From "The Lyrebird", Oct. 77

The Mid South Coast Amateur Radio Club has made an unusual contribution to mobile VHF operators travelling the Princes Highway on the South Coast of NSW. This is the planned provision of "access" points in various locations to enable amateurs to reach repeaters not normally accessible when mobile.

The first of these points, giving access to VK1RGI on Mt. Ginini, has been installed in the Milton-Ulladulla district, 233 km south of Sydney. An eight-element beam antenna (a "Quap" refer QST April 77) has been mounted on a convenient tree and the co-ax feeder brought underground to a strong steel box fastened to a fence post on the side of a little-used track.

The gain of the antenna is estimated to be about 13-15 dB. The loss in the co-ax feeder is about 2.5 dB. The SWR is less than 2:1. Provided propagation conditions are reasonable, the ten watts or so from the average transceiver should get a good noise-free signal into VK1RGI.

The box is padlocked, but amateurs can bypass the lock by pushing a pencil or small stick through a hole in the front lid. Inside the box is about 4 metres of co-axial feeder terminated with a PL259 plug for connection to your rig.

A log book is supplied to measure the degree of use.

The box is painted green with the letter G.I.N.I.N.I. printed to give an official appearance (but that such would stop determined vandals).

To find the box, turn off the Princes Highway at the Ulladulla Post Office (opposite the harbour) and travel west along Green Street for about 1.5 km. At the end of this street are five white "termination" posts, skirt around these and continue straight on about 100 metres following the power lines. The box is on the right side fence opposite the first power pole.

Prospective mobiles should make a note of the above against the time they may be in this area.

The Club is making surveys to provide more access points for Mt. Ginini and Wollongong repeaters at several locations along the coast.

It would be appreciated if visitors would fill in the log book and securely lock the box.

— Information from Frank VK2HQ

LETTERS TO THE EDITOR

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publishers.

The Editor,
Dear Sir,

In the September issue of Amateur Radio mention was made by Sam Voron VK2BVS of the formation of a VK/CB club. After discussions with Sam a Victorian Division of the VK/CB club is being formed and as Victorian Co-ordinator I cordially invite VK3 amateurs to join the VK/CB club and assist in educating CBers to a standard suitable for a pass in the Novice Amateur Licence. The aim of the club is to assist the CBers in the use of his or her station and to minimise friction between the two radio services, Amateur and Citizens, where basically each service achieves similar trials.

Membership to the VK/CB club is open to all interested. The VK/CB club will work together with various CB clubs in Victoria and will reflect the spirit of the amateurs contribution to the development of the Citizens Radio Service.

For further details on the VK/CB club in Victoria, write to Mark Stephenson, 43 Cuthbert Road, Reservoir, 3073, enclosing a stamped self-addressed envelope to assist in a prompt reply.

Yours sincerely,
Mark Stephenson,
Victorian Co-ordinator (VK/CB Club).

The Editor,
Dear Sir,
Just a few lines through your column to thank the many amateurs who gave me encouragement and assistance after the fire which destroyed my home and all my gear. Although the fire was in October 1976 this is the first opportunity I have had to thank them all.

We are now re-established in our new home and will be looking for some new gear to get back on the air.

Again thanks.

73's

Dan A. Clift VK2DC.

The Editor,

Dear Sir,

Re VK3KX.

My apologies to all Novices awaiting confirmation of QSO with YJ&KM. My recent wedding has delayed despatch of the cards; and the overwhelming demand for that country and its close proximity to Australia (easily worked on 80 metres) have completely exhausted both Ken's and my QSL supplies. A new set of cards will shortly be printed. To those who sent a s.a.s.s.e. thanks, to those who didn't, check your cards from the Bureau after Christmas.

73's

Steve Gregory VK3OT

The Editor,
Dear Sir,

I refer to the letter from Mr. N. W. Lavella VK3ABH, in November AR, wherein he refers to the Russian pulse interference, and states, quote:

"I have yet to see any evidence that official observations have been lodged at any level."

I would like to inform him and all others interested that, since the Russian P9 Pulse first appeared in our bands, 35 completed Appendix 8 forms covering 105 separate observed intrusions on 100 separate segments in the 7, 14, 21 and 28 MHz band have been handed to officers of the Radio Frequency Management Division of the Postal and Telecommunications Department.

I might also mention that several hundred further reports on other intruders, broadcast stations, etc., have also been lodged. Many more would have been presented if more amateur operators had offered themselves as regular intruder watch observers, but such is not the case. I have made appeal on WIA broadcasts, and since February 1977 have sent letters fully detailing our needs to the secretaries of 10 clubs and zones, and have received only one reply.

We cannot force the authorities to act on our reports. We can only make representations. We have done so, as the above details indicate.

I am yours faithfully,

Ivor Stafford VK3XB,

Acting Federal Intruder Watch Co-ordinator.

The Editor,
Dear Sir,

Reading an article on "How to become a Radio Amateur" stirred me into writing an article for the benefit of amateurs. In this particular article one paragraph is very interesting. It reads:

"If it had not been for the courage, persistence and tenacity of a relatively few enthusiasts — particularly in America and England — amateur radio would have died in those post-war years and the world of communication would have lost its services of hundreds of technical people..."

Perhaps the death of amateur radio is or isn't happening — nevertheless the interest in this paragraph lies in the fact that in our day and age there are still only a few persistent and tenacious people keeping amateur radio alive, and one group doing just that are the Intruder Watchers.

I often hear of people complaining about commercial stations or RTTY or contesting QRM in the 80/40 metre bands — unfortunately these same people do nothing about it! Have they ever heard of hetrodynamic an intruder — or noting down/taping the intruders — then relaying the information to their Intruder Watch Co-ordinator? Obviously, if you cannot be a member of every radio club in the State, participate in fox hunts or in seminars and contend with an XYL too — but surely he can contribute a little to amateur radio by ensuring that the bands are free of unwanted and illegal stations?

CBers look over 27 MHz — were they not intruders? Two metres is slowly being taken over in the same manner (although assuming that the intruders are all CBers is false). Unfortunately, you the ordinary amateur will not stir until your particular favourite frequencies are threatened! Don't wait until then to act, do it now while something can be done!

It's not up to Alf Chandler and his Co-ordinators to do all the work — it's up to you to help, after all, they are your bands — AT THE MOMENT!

Particular frequencies to watch are 3535 kHz, 3550 kHz, 3560 kHz, 3640 kHz, 7060 kHz, 7070 kHz,

and 7090 kHz. Details needed are station identification, types of transmission and periods of transmission. Details should be sent to your Intruder Watch Co-ordinator in the State in which you live.

Yours sincerely,

Mark Stephenson L3048

(awaiting Notice call).

The Editor,

Dear Sir,

I would like to advise you on a couple of matters which may be newsworthy in AR.

Firstly, last night (23/11/1977) at 0910Z the normal sled with my friend Graham ZL2AGU in Auckland North on 3.570, I suggested that we try to contact on 21.170 MHz which we did at 0930Z. Quite reasonable signals were received both ways — even though the band was not good. I then suggested that we try 10 metres — 28.550 MHz.

I had another rig running on this frequency and gave ZL2AGU a call at 0930Z, and he came back to me. Not strong — S 0 but readability 5, and he gave me R 4/5 S 0. So I had made three contacts on 3 bands with the same station within half an hour, on virtually two "dead" bands. I guess this is a record.

Now, the other item — and something which needs correcting — is the information which AR published over a year ago, called "GSRV Antenna, by GSRV, the Mac Himself".

All text books and AR are wrong in giving the length of the 300 ohm flat TV ribbon feeder as 29 ft. 6 in.

The correct length of 300 ohm ribbon is 32 ft. 6 in. No wonder people were troubled with SWR problems. How do I know? Simple. Recently I had a G5SD on 40 m with a 2L who was using a GSRV and his signal was superb — he told me his SWR was flat on all bands except 28 megs and it was 1.6:1 on this band. When I asked him for further details, he then told me that he often has a s.k.e.w. with Lou Varney GSRV on 40 m, and Varney told him that "somehow the text books published the wrong information".

His own 300 ohm flat ribbon is 32 ft. 6 in. and he does not use a balun.

I gave this information to a "N" call friend of mine and he said his signal on 80 m is excellent.

So that's the story. Also what about publishing something on the "10 x 10 International" net, so that amateurs may join in on this 10 metre band and thus populate the band. I am the first Novice in VKT to have qualified for my "10 x 10" certificate — my number is 14753.

Vy 73,

Jim Davis VK7NOW,

Activity Officer MWIA, North-Western Branch.

(Any takers for an item on the 10 x 10 net? —Ed.)

15 Broughton Street, Tumut 2720, N.S.W.

The Editor,

Dear Sir,

Not yet being a Novice operator as I failed the last theory examination. I don't know if you will read this letter or print it, but I would like to write it anyway.

(We are doing both, Butch! — Ed.)
Possibly the only way I have truly sorry and shocked I was to hear of the passing of Tubby Vay. I am one of the unfortunate people who never got to thank him on air for his help in the Morse sessions. I will miss his key pounding away very much.

I was a bit disappointed to read of the bitterness that some of you readers have toward Citizens' Radio operators. I know that most of the rot you can hear is a bit trying, but you must try to remember that most of them don't know what they are doing wrong? I am sure that if they had someone with VK knowledge most of them could become respectable amateurs. (let's face it, we all have to learn from someone).

We had a problem in Tumut as small as it is, and we were very fortunate that local VKs here came forward and helped us, and we now have a good Amateur Radio Club.

I am not trying to excuse anyone on any side, I am just feeling glad that our local VKs came forward when they did to help us on to a radio career.

Yours faithfully,

Butch Chapman.



EMONA electronics

CBC BANK BUILDING, HAYMARKET
Room 208/661 GEORGE STREET,

PHONE: 212 4815
A.H.: 399 9061

MAIL ORDERS: Box K21, Haymarket
NSW, 2000, Australia

WRITE, PHONE OR CALL IN!

NEW-NEW-NEW

National

RJX SERIES



A Unique New SSB/CW Transceiver For Amateur Communications

There is no substitute for quality, performance, or the satisfaction of owning the very best. Hence, the incomparable National RJX-1011 amateur transceiver. The RJX-1011 covers all amateur bands 1.8-30 MHz (160-10 metres). It utilizes advanced Phase-Lock-Loop circuitry with dual gate MOS FETs at all critical RF amplifier and mixer stages. There's a rotating dial for easy band-scanning and an electronic frequency counter with digital readout and a memory display that remembers frequencies at the flip of a switch. And that's just the beginning. Matching speaker unit RJX-S1011 and complete external VFO RJX-V1011 also available.

For further information and specifications write, phone or call in!

ANNOUNCING — ANNOUNCING — ANNOUNCING

NEW Robot Model 400

All solid state digital random access memory SSTV SCAN CONVERTER

- ALL SOLID STATE RANDOM ACCESS MEMORY
- SLOW-TO-FAST AND FAST-TO-SLOW CONVERSION CAPABILITY
- SSTV PICTURE DISPLAY ON ANY STANDARD CCTV MONITOR
- FRAME FREEZE FROM ANY STANDARD CCTV CAMERA, BROADCAST VIDEO OR VIDEO TAPE SOURCE
- PERMANENT PICTURE STORAGE
- AUTOMATIC OR MANUAL TV FRAME SNATCH
- INTERNAL GRAY SCALE GENERATOR ADJUSTMENT STANDARD
- CAPABLE OF REAL TIME DISPLAY OF DIGITALLY PROCESSED FAST SCAN VIDEO

Go RTTY — EMONA's silent way!



New Model 150 RTTY KEYBOARD

Features:
4 speeds (60, 66, 75, 100 wpm)
Built-in AFSK with 3 shifts (170, 425, 850 Hz)
Automatic CR & LF at end of 64 or 72 character line
Built-in low shift CW ID provision

New Model 75 RTTY TO VIDEO CONVERTER

Features:
4 speeds (60, 66, 75, 100 wpm)
Built-in T.U. with 3 shifts (170, 425, 850 Hz)
32 character x 16 line video output with scrolling
Connects directly to receiver audio & video monitor



NEW: Medium-Sized Ham Antenna Rotator — FU 400.

Constructed for long trouble-free operation. 200 kg vertical weight capacity. Extra heavy duty disc brake that prevents wind-milling.



New Model DX-555 Counter-Generator

Generator:
440 Hz to 30 MHz in 3 ranges.
Output displayed on counter and available at jack on rear panel 600 Hz modulation for AM receivers.

Counter:
5 digit display, 7 digit readout capability, 10 Hz to over 30 MHz (250 MHz with prescaler). Input level 20m Vrms to 5 Vrms (Prescaler 200m Vrms to 2 Vrms). Base oscillator beats directly against WWV.



LINEAR AMPLIFIERS

SCS: HF3-100L2, 3-30 MHz bi-linear amplifier.
SCS: 2M10-80L, 144-148 MHz, FM/SSB linear amplifier.
METRON: MA1000, all solid state, 1 kW amateur band linear amplifier — lightweight, compact and rugged.
YAESU MUSEN: FL-2100B, 80-10m linear amplifier.

ANTENNAS:

HUSTLER: 4-BTV — vertical trap antenna.
HUSTLER: Mobile vertical trap antenna (80-10m).
HUSTLER: G6-144A, 6 dB gain base colinear.
HUSTLER: CGL-144, 5.2 dB gain mobile colinear trunk-lip mt.
HUSTLER: BBLT-144, 5/8 mobile with trunk lip mount/spring
CUSHCRAFT: ATB-34, 4 element beam, 10-15-20m

RF PREAMPLIFIERS FOR 3-30 MHz BAND:

Model SX-59 for use with transceivers.

SPECIFICATIONS:

Frequency range 3-30 MHz in 3 bands;
3-7, 7-14, 14-30 MHz
Gain 20 dB nom. (at 7 MHz), front panel variable control
Attenuator — 20 dB attenuation selectable from front panel control
Imped. 50 or 75 ohm systems, UHF connectors on rear panel



AMATEUR BAND TRANSCEIVERS:

NEW — NATIONAL: RJX1011 — Unique SSB/CW 160-10m transceiver with digital readout and matching speaker and external VFO.

TRIO KENWOOD: TS520S — SSB/CW, 160-10 metres, with optional digital readout.

TRIO KENWOOD: TS820S, 160-10 metres digital readout.

TRIO KENWOOD: TS820, 160-10 metres.

TRIO KENWOOD: TS700A — 144-148 MHz all mode transceiver.

TRIO KENWOOD: TS600A — 50-54 MHz all mode transceiver.

TRIO KENWOOD: TR-7400A — 144-148 MHz FM transceiver.

YAESU MUSEN: FT101E — 160-10 metres, AM, SSB, CW transceiver.

YAESU MUSEN: FT301 series, 160-10m AM, SSB, CW transceiver.

RECEIVERS:



TRIO KENWOOD: R300 general coverage BCL receiver.

YAESU MUSEN: FRG-7 general coverage Rx, Wadley Loop System.

ALL AMATEUR RADIO EQUIPMENT IS AVAILABLE ON 10% DEPOSIT TO APPROVED BUYERS!

Check EMONA's most COMPETITIVE Prices!



EMONA electronics

CBC BANK BUILDING, HAYMARKET PHONE: 212 4815
 Room 208/661 GEORGE STREET, A.H.: 399 9061
 SYDNEY, NSW 398 6378

MAIL ORDERS: Box K21, Haymarket
 NSW, 2000, Australia

WRITE, PHONE OR CALL IN!

INTRODUCING *DenTron*

LINEAR AMPLIFIERS:

DENTRON RADIO CO.: MLA-2500, 160-10m linear amplifier.
 DENTRON RADIO CO.: MLA-1200 — 80-10m linear amplifier.
 DENTRON RADIO: 160-10L Superamp, 160-10m linear amplifier.

ANTENNA TUNERS:

DENTRON MT-3000A DENTRON 160-10AT DENTRON 80-10AT

The MT-2000A

The DenTron MT-2000A antenna tuner, an economical full power tuner designed to handle virtually any type of antenna, whether it be a vertical, beam, quad, dipole, or long wire. The sleek styling and low profile of the MT-2000A is certainly beautiful, but be assured that isn't all you're buying. The MT-2000A is designed and engineered using heavy duty all-metal cabinet and high quality American components throughout. When you consider the MT-2000A's unique features — front panel coax bypass switching, front panel lighting protection antenna grounding switch, 3 kW PEP handling capability and built-in 3 core balun for balanced feed line, we're sure you'll decide to buy American and stay with DenTron.



The Jr. MONITOR

Call it what you will — antenna tuner, transmatch, match-box, or matching network, the JR. MONITOR has it all wrapped up in one neat 5 1/2 in. w. x 2 1/4 in. h. x 6 in. d. all metal cabinet. Think of the unlimited possibilities you'll have for experimenting with dozens of antennas! For instance, the DenTron All Band Doubler fed with balanced feed line hooked to the JR. MONITOR covers 1.8-30 Mhz . . . or try this mobile suggestion: 108 in. mobile whip fed with coax to the JR. MONITOR located under the dash will give you 10-40 metre mobile coverage and no coils to change! Order Today.



DENTRON MLA-2500

DenTron Radio has packed all the features a linear amplifier should have into their new MLA-2500. Any Ham who works it can tell you the MLA-2500 really was built to make amateur radio more fun.

DENTRON ANTENNAS:

SKYMASTER — 10, 15, 20, 40m VERTICAL.
 SKYCLAW — TUNEABLE MONO BAND 160-40m EX-1 IDEAL VERTICAL FOR PHASING.

- WRITE OR CALL FOR SPECIFICATIONS.
- CHECK OUR MOST SENSIBLE PRICES.

**WE ARE AUSTRALIA-WIDE
 DISTRIBUTORS OF
 DENTRON PRODUCTS**

QUALITY Q.S.L.'s are HERE!

A fine range of quality QSL cards are available at selected retailers now!
 A multitude of designs are available all over printed with your call sign and address in your choice of glowing metallic foil.

These cards are not meant to replace your bulk QSL's, but as well as, for your special contacts.

Agent or retailer enquiries invited throughout Australia.

AVAILABLE AT

VIC.: Audio Shack, Ball Electronics, Delta Base, Eastern Communications Centre, Graham Electronics (Mitcham), E.B. Service Centre (Burwood), Radio Parts, Vicom.
 N.S.W.: Audio Shack, Emona Electronics, Tweed Heads 2-way Radio.
 S.A.: Watsons, World Imports, Xenon World Imports.
 A.C.T.: Dicom Electronics.
 W.A.: Abel Music Co., WACB Radio Centre.
 N.T.: The Communications Centre, Alice Springs.
 TAS.: CB Emporium.

and many more retailers throughout Australia

TEMPORARY QSL CARDS!

All printed in two colours on front with your State in second colour, details on back in second colour, on quality QSL cards.



Design 101



Design 102

To Quality QSL
 34 Devonshire Drive,
 Noble Park, Vic. 3174

☐ Please rush me . . . hundred preprinted QSL Cards
 Cat No. @ \$4.95 per 100. Plus 45c p.p.

Specify State

NAME

ADDRESS

Postcode

VHF-UHF AN EXPANDING WORLD

Eric Jamieson, VK5LP
Forreston, 5233

AMATEUR BAND BEACONS

VK0	VK0MA, Mawson	53.100
VK1	VK1RTA, Canberra	144.475
VK2	VK2WJ, Sydney	52.450
	VK2WJ, Sydney	144.010
VK3	VK3RNR, Perth	144.120
VK3	VK3RTG, Vermont	144.700
VK4	VK4RTT, Mt. Mowbrall	144.480
VK6	VK6ABB, Brisbane	432.480
VK5	VK5VF, Mt. Lofy	53.000
	VK5VF, Mt. Lofy	144.800
VK6	VK6RTV, Perth	52.350
	VK6RTV, Kalgoolie	52.350
	VK6RTW, Albany	144.500
	VK6RTV, Albany	144.500
	VK6RTV, Perth	144.000
VK7	VK7RNT, Launceston	52.400
VK8	VK8VF, Darwin	52.500
JA	JAZGY, Nagoya	52.500
KG6	KG6JGQ, Guam	50.110
KH6	KH6EQI, Hawaii	50.104
ZL1	ZL1VHF, Auckland	145.100
	ZL1VHF, Waikeke	145.150
ZL2	ZL2MHF, Upper Hutt	28.170
	ZL2VHP, Palmerston North	145.200
	ZL2VHP, Wellington	145.200
	ZL2VHP, Palmerston North	145.250
	ZL2VHP, Palmerston North	433.250
ZL3	ZL3VHF, Christchurch	145.300
ZL4	ZL4VHF, Dunedin	145.400

* Despite the letter from Selwyn ZL2BQJ correcting the ZL2VHP station frequency to 52.250 last month, in speaking to John VK2BHO recently he said the beacon was still operating on 52.500 — so what gives?

As these notes are written the end of 1977 has arrived, with plenty of mixed feelings regarding the type of VHF DX season experienced so far. There seems ample evidence in many areas of VK that something unique in the history of the atmosphere to produce a long drought on six metres for about a fortnight at least during the middle of December. In VK5 as in many of the eastern States, areas the 23rd and 24th December were extremely poor, with practically no openings, some improvement on Christmas Day, and to finally come good again on the 25th, and has been reasonably good since.

Then you strike others like Steve VK3OT at Hamilton who says he has not noticed any great changes from usual, but maybe he has been operating from a more optimum location, with skip going well over the 1000 miles to produce long haul signals, but not so much at 1000 miles and down to 600 miles which suits VK5 and many other areas. Anyway, what really matters is how you personally find it.

Graham VK8ZCJ in Darwin writes again this month with a couple of newsy bits to commence. Firstly, Leyell V88BE in Hong Kong advises he now has spot frequency allocations in our portion of six metres, namely 52.025 for November, December and January, and after that is likely to be 52.100, which is very good. It seems if we are unable to go down to work 'em they will come up to work us!

Graham also mentions receiving the current antenna schedule for KH6EQI beacon viz. 500, to 2300Z North America; 0400 to 2300Z South America; 0100 to 0400Z North America; 0400 to 0700Z Guam, and 0700 to 1500Z South Pacific. If sufficient reports are received the schedule could be re-arranged to suit openings.

A letter has arrived from Dick Northcott, 302CM, C/- University of South Pacific, Box 1168, Suva, Fiji Islands, in which he mentions receiving my notes for October 1977, and writes to say "I know there is a station at this end of the world interested and set up for 6 metre operation. I have for the past few weeks been listening and occasionally transmitting but with no result. I have a transmitter which has an output of about 30 watts PEP and a 3 el. yagi. I am located in an elevated position which has a clear outlook towards New Zealand, but it is a bit cluttered towards VK.

"Frequency wise I am very limited, my transmitter works into an HW 32A which only covers 150 kHz and so have arranged to cover from 52.050 to 52.200 which includes the ZL and VK calling frequencies. Unfortunately I am further limited in not being quite sure of frequency to the last 5 kHz having ground a crystal at 6 MHz and found its frequency to the last kHz or so. Another crystal is coming soon which should solve the frequency problem.

"I would be pleased to arrange skeds by either post or via 20 metres, and am anxious to work into VK".

Thanks for writing Dick, and I hope you make the contact soon. We do appreciate your efforts in trying to make a signal available from Fiji on six metres, and probably those of us better situated with regard to operating sites and facilities do not appreciate what is really involved in getting on the air on VHF in such a remote location. Good luck, the fact that YK8KM from the New Hebrides has been worked very consistently indicates at least possibilities for you.

George Francie, P29HV/VK3HV sends a lot of information including the high incidence of reception of stations, as well as some news from New Zealand Ch. 1. JAs were worked on 6-10, 7-10 (21 contacts) 1015 to 1312Z; 8-10, 9-10, 27-10. First VK contact since 2-7 came on 7-11 to VK4RIR, VK4UH and then to Barry VK2ZAY. First real test of inter-state DX after 9 months of resistance occurred on 17-11 when he contacted VK4ZRO, VK7DFA, VK7FZJ, VK2BXT and heard VK3AMM. During this opening 0820 to 0815Z, Ch. 0 from Brisbane, Wagga and Melbourne were watched, as well as TV from Auckland and Gisborne, N.Z.

Things were relatively quiet until an unexpected opening on 12-12, the day starting off with Brisbane Ch. 0 at 2210Z, the first JA heard at 0340 patchy working ZL4LV and ZL3AAN, they came up quickly in signal strength at 0608 enabling him to have 5 x 9 d JA52, 2, 3, 4 and 5, until a quick die out of 0701, 23 QSOs. During this opening George heard 10 JAs working VK3 and 7 between 0630 and 0730Z. He suggests this opening came as a surprise to both the Japanese and Australian operators.

George also includes copies of a number of letters from JA stations, and the following are extracts from them which could be of interest to readers. Firstly, the letter from JA working on six metres, and lists the following stations in the Pacific area as active on 6m: HLWVI, KL7FBI, J01YAA (Marcus is), J01AIZ (Bonnie is), V88BE, V85DA, KG6RO (Salpan is), KG6DX, KG6AP, KG6JDX, KG6JH, KH6EI, KH6IAA, V85BJS/DU, KH6H/H/DU, F06DR, K05CW. He also lists J01YAA on Marcus is, as having a beacon on 50.110.

Hatsuo JA1VOK mentions in his letter that numerous stations in Japan run from 10 to 50 watts with 5 to 8 el. yagis, 10 to 20m high. He also mentions receiving a letter from F06DR in Tahiti who operates on 50.100 every day and had worked three KH6 stations by the end of August.

Kazumasa JE1HYR joined JR15QU, JR1FZZ and JR1FRO in a contest to Ponape is from 3 to 11-8, and operated under the call sign KG6PO, contacting 142 stations in Guam, Saipan and Japan. At home he uses a TS520 with a transmitter using a 4CX250 and 200 watts input.

Finally from George P29HV, I have received a copy of "Garamat", newsletter of the Papua New Guinea Amateur Radio Society, which is very interesting and contains a lot of information. Of special interest to VK and north Queensland operators in particular is the progress being made with a 2 metre repeater for P29, which will probably be operating by the end of the year. Frequency probably will be Ch. 48 46.10/147.000 and the transmitter will run about 10 watts output, in the interests of reliability and to minimise desensitising problems. Deviation about 7 kHz, time out 3 minutes, and MCW Ident about 7 every 5 minutes at low level. Three good sites in elevated positions are being considered at the moment, and antenna experiments are being conducted to find a good and cheap gain antenna, as until enough funds are raised for the purchase of a cavity duplexer, they will have to operate with two separate antennae. Call sign P29RPM.

So it may not hurt you two metre operators in VK4 at least to watch that repeater in P29, additionally, if you do hear it and have 144 MHz gear as well, remember George P29HV monitors 144.100

continuously, looking south, and calls CQ when he receives high band colour TV from Queensland. This has occurred on the evenings of 28-3, 3-9, 9-10 and 13-11, receiving Ch. 6 Mackay, Ch. 7 Townsville, and Ch. 9 and 10 Cairns for several hours at a time, due mainly to ducting across the Coral Sea. It would seem there is only a matter of time before a two metre QSO takes place between VK4 and P29, and this may well be aided by that repeater!

Looking at 6 metres in general it would seem from this and anyway that there are a few out standing days this year, such as 13, 19, 26 and 29-11, 2, 3, 4, 26 and 30-12, 1, 2, 3, 4, 26 and 30-12 seem to stand out from the others due to the extremely wide coverage of contacts available, plus at least two JA openings the same day, followed by another the next day, 4-12. On 3-12 the JAs first arrived around 0330Z continuing until about 0400, they appeared again about 0615, this time including JR6QDO and JH6TEW, which districts seem to be a bit rare around here. It was a good day because even I was able to work VK1 to VK8 inclusive, ZL1, JA1, JA2, JA3 and JA6 areas.

Geoff VK3AMK in a letter agrees with all the above, with only slightly varying times for the JA openings, but the areas worked in VK3 and VK7 were at a limit, not at all, and the JAs being available across the continent. Ken VK3AKK worked 18 JAs which included JAD and JA7 which Geoff could not hear, also Ken worked JABEXN which was his first JA8 in more than 70 JA contacts, and believed to be the opening to be worked from VK3 since the CQ commenced.

The second Japan opening the same day was not heard by Steve VK3OT, but by Geoff VK3AMK and here in VK5. And it seems some call signs are now becoming familiar from Japan, apparently being the most keen, and keeping a good ear on the band e.g. JA1ZLK, JAZDON, JA2BZY, JA1RU, JA1VOK, etc.

Geoff also remarks on the incredible number of stations which continue to use 52.050 after establishing contact, so that portion of the band becomes hopelessly blocked. The message is obvious!

Robert VK3AUR writes to support the campaign to regain 50-54 MHz, and offers a number of interesting thoughts. I also want to thank Geoff VK3AMK for an extensive letter outlining a number of ideas on the amateur band, thanks Geoff. It was timely! Anyway, back to Robert, who takes both the Melbourne and Adelaide 2 metre ops, to task for lack of interest in the band — remaining mostly on repeaters — this extract from his letter is good. . . . many only use repeaters, and the DX is the easy way. I personally get quite upset to hear Mr. William Ch. 7 clogged with VHF DX experts working Melbourne to Adelaide, expounding on the virtues of this or that black box, and generally patting themselves on their collective backs, while a few dyed-in-the-wool rare VHF operators call vainly towards Melbourne or Adelaide (beacons running 20 dB SN or better) to nil response except from one or two regulars. The cap will fit those with the correct head size.

Robert reports a rather exclusive 6 metre opening to him on 6/11 from JA when he heard many signals and worked JR3RRK and JR3AKT during the 10 minutes of the opening. Later, Roy VK3AUX who is 50 miles away heard nothing, and it appears no one else did. Exclusive job!

Although Robert calls the following "bitching" and is concerned to a degree he has written it, I feel there is surely a message here, which I think you, as an amateur, should read at least twice, not once, and digest, some of the thoughts may be applicable to you.

Many amateurs seem to be interested in developing the stations these days, black boxes have added to VHF/UHF activity, but to the detriment of DX.

(a) To name but one rig, the IC202 has poor overall noise figure, and the addition of a PA means big mouth, little ears.

(b) From my own experience, home made 'long yagis' don't as a rule exhibit the gain claimed. Even the measuring cone can cause a false red flag from some who have learnt the lesson.

(c) Lousy co-ax e.g. ex disposals, yellowing dielectric.

(d) Glogging call frequencies with local chatter, and failing to leave at least a 3 second break between others.

"(e) Not bothering to listen with attenuator (sorry, beam) pointed in a useful direction, at least like it up on a worthwhile point.

"(f) Lack of interest in coming on the band!

"If 10 watts into a non-directional antenna (VK3RTG beacon) in a not too brilliant location in Melbourne produces 10 dB SW or better 180 miles away, logic dictates that 3 watts into a 10 dB gain antenna should equal or better that performance, depending of course on your own location. It's not being done. The band has to be really hot to be heard except for a few really dedicated stations, who go to the trouble of making sure their station is efficient.

"I don't suggest that vast amounts of money be spent, but a 2N3010 pre-amp costs about \$5, and makes a world of difference. Sorry for the blurb, but it's much more important to have a pre-amp than so much pressure from outside interests who would take our 144 and 432 MHz bands in a flash if they could lay their hands on them."

"And just to keep some hope, I'm not really against black boxes, I had a beast QSO with Jim VK4ZMJ in London for about 15 minutes on 11-11 and he sounded good on his motor cycle using an IC502, hand held. At times his signal peaked to S9+." He had a ball!"

Well Robert, I don't think anyone will be too snaky with you, probably what you have said is fact in many circumstances. I can support you by saying just how much it means to spend some time (and money) on upgrading an antenna system. For many who have visited my QTH will testify, I don't live in a good VHF area, so I work hard for all I get in the way of contacts, especially on 144 and 432 MHz. However, at the end of November I finally was able to place in position my two recently constructed 16 element yagis for 144 MHz, spaced 14 feet apart, with the top yagi of the pair 88 feet high. Proper matching baluns were used, and a new high pre-amplifier fitted for receiving — this can be switched in and out of circuit as required — and the improvement in results over the original 8 element yagi at 57 feet (which is still in position for evaluation purposes) is staggering to say the least, particularly when the amplifier is used. I can now receive as good a report as I can give in return, and it makes me feel good for the first time for years. The next thing is to find the time to make good use of it, but I do believe that one makes a worthwhile attempt to upgrade equipment, there is more likelihood of it being used often because results will be more rewarding on a greater number of occasions than with a mediocre assembly. My next move is to do much the same for 432 MHz.

Steve VK3OT has written with some interesting news. He adds further to the fantastic opening all over Australia and New Zealand on 3-12. VK3 worked 2L1, 2, 3 and 4 that day. YJ8KM worked first 2L2 ever for number 1 QSO YJ to 2L. VK9NI working into Sydney on 29-11, though appears not to have been heard much since.

On 20-11, TV channel from Madan, Indonesia, found us 53.75 MHz. Went into Wally VK6ZTJ for six hours at 5 x 9+. Witnessed also by VK3AKM and VK5SV over phone. Steve worked ED VK8ZTR/6 for first 6 metre QSO with Giles, WA at 0430Z 02/05 on 17-12. ED is now QRT and will be taking up residence in Townsville shortly.

Steve is not very pleased at the prospect of a 100 kW Ch. 5A station about 15 miles north of Hamilton, TN, in 1980. Exit all Western VK3 contacts on 2 metres, severe restrictions probably will spell the end of 2 metre contacts across the border between VK5s and VK3s and VK7 — still, it's an easy way to ease the amateurs off the band, instead of the more modest, but for licensed operators revenue — it's the thin edge of the wedge, you see! Hugh VK5BC reports local Ch. 5A causes severe disruption to low end of 2 metres. Ask John VK2BHO what his Ch. 5A does to him on 144 MHz?

John VK7JW confirms that Greg VK7KJ worked KH6ES, awhile back, and was unknown to him on 5 x 7 and 5 x 4 received. We all offer our congratulations to Greg. And of course, VK7 have been really given the royal treatment this year, with JA openings on 6 metres, on 13-11 for 3 hours, with some stations working early. JA stations as back again on 14-11 and 3-12 etc. Not to be outdone, 144 MHz opened to VK7 on 13-11 when David VK5KK worked VK7ZAH and VK7ZIE with distances around 750 miles, via an inversion.

I notice an "In Memoriam" notice in the WA VHF Group News Bulletin for Nov/Dec which reads: "Oscar 6 officially died on orbit number 21405 on 15-6-77 after failing to respond to ground command signals, it was launched on 15-10-72, its anticipated life-time then was about 1 year. Well done, Oscar 6. R.I.P." Indeed well done.

A few snippets from my note book. Tony VK6BV in Kalgoolie was noted working 2Ls on 6 metres early December, that's a long haul — reported in Ham Radio Sept. 1977. A 5000 km contact on 144 MHz across the Atlantic between Brazil or Venezuela and the Ivory Coast of Africa, that's also a mighty long haul, and will no doubt eclipse the terrestrial record for that band if verified. I will obtain details later ... There have been quite a number of good 144 MHz openings between Albany and Adelaide, 10-12 VK6XY, VK6BE and VK6KJ all 5 x 9+, VK6XY and VK6W6 also on 432.1 5 x 9, and on 1296.12 MHz David VK5KK had a contact extending over 1½ hours with his 3 foot dish being supported on the back fence by father VK5SV, signals 5 x 6 ... Graham VK8CZJ has passed his CW ... Wally VK6BV had his VHF tower struck by lightning on 22-12, damage to aerials, but not a lot of equipment damage I hear ... YJ8KM heard a very good signal on 24-12 ... 144 open to Albany on 26-12, many stations worked in VK5 and VK3. Bob VK6BE heard Charles VK3BAR on 144.1 at 1215Z, 144 open intermittently all day ... Ken VK2FQ on Koolan Is. off NW coast of Tasmania, had a 144 MHz opening between Melbourne in the year he has been there ... VK2GZF Alice Springs copied TV Ch. 4 on 27-12 at 0425Z good signals, Gr. 3 from somewhere snowfree.

Finally, two things. Those requiring QSLs for contacts with YJ8KM and VK9NI should send their QSL with SA envelope to Steve Gregory, VK3OT, P.O. Box 22, Hamilton, Victoria.

Secondly, those full call amateurs who send CW on the VHF bands should give consideration to slowing down their speed of sending if they want more contacts. Please bear in mind there are quite a few limited licensees with a knowledge of CW, but particularly as some also now have N calls, and 15 to 20 w.p.m. CW is not called for on VHF when calling CQ. If you make contact with a good CW operator then use the speed which is most satisfactory to both operators, but KEEP EME DOWN when sending your call during a CQ call. Anyway, it's long been proved through EME contacts that high speed CW has little use for marginal contacts through noise and with the fading characteristics of sporadic E VHF, and on 144 and 432 MHz. A weak CW signal is more likely to persevere with a weak CW signal if he has a chance of deciphering it, he won't spend long with a 15 to 20 w.p.m. signal if he can't copy better than 10. Give it a thought boys, the above might make some sense, I know it is not so easy for a practised operator to send rather slowly, but don't worry, the guy at the other end will sort it out!

Thought for the month: "A different world cannot be built by indifferent people".
The Voice in the Hills.

STOP PRESS

1-1-78—Big six metre opening, VK5 worked VK1, 2, 3, 4, 5, 6, 7 and 8. 0900 144 MHz opened up to VK3, with VK3BEH 5 x 9+, then to VK3OT, and VK5DK and VK5NM (Mt. Gambier). Roy VK3AXV, then all repeated again. Steve VK3OT watching TV from Albany.

2-1-78—144 MHz continues with excellent signals from VK5 to VK3OT, VK3BJ, VK3LT, VK3AXV, VK3ZHY, VK3BEH, and several others, plus Mt. Gambier VK5DK, VK5NC, VK5MC, VK5ZCH etc. Michael VK3QZV about 100 miles east of Melbourne at Carrerung 5 x 9+ at night.

432 MHz also open. David VK5KK worked Michael VK3QZV with signals 5 x 9+ at 8.15 PM. David also worked by Peter VK5ZPW, and Keith VK5MT. Not sure who really worked with on 432 at this stage, but I know Keith VK5MT. Roger VK5NY were also in it from this end and Les VK3ZBJ at least from the VK3 end.

To cap off two nights of really good VHF/VHF DX I heard Gerry VK3ZK working ED VK8ZTR/5 and VK3ZMA/5 both at Loxton on the River Murray on 144.1. At 1255Z I also worked them, they were using an FT211 and an IC202 to a vertically polarised antenna, and both pieces of equipment were contacted here. Mark VK5ZVJ then worked them.

It was also noted during the 2 metre opening on 2-1-78 that Col VK5RO from his super location at Woodville worked Mike VK3LT in Melbourne, using his IC202 and whip antenna. Not a bad effort Col.

Also 2-1-78, Kerry VK6BXT (ex-VK5SU) worked Kevin VK7ZAH, Daniel VK7DA and Joe VK7JG on 144 MHz. 6 metres was very strong into VK2 at the time, ZLs into VK3 at the same time.

It was almost VK5 to VK4 on 144 MHz on 1-1-78, when the interrupted carrier from Rod VK2RQ was received at the VK5LP establishment, and relayed back to Rod on 6 metres. 144 only stayed open for a minute or so, thus no contact resulted, there wasn't time to get organised once Rod had recognised his signals.

Looks like the "season" did come good for a while after all.

VK5LP

SPECIAL ANNOUNCEMENT NEW WORLD 432 MHz RECORD?

On 11-1-78 Les VK3ZBJ and Wally VK6ZTJ/6 made Albany, WA contact on 432.125 MHz. Reports were 5 x 3 both ways, distance 2470 km.

The current Australian record is 776 km between VK5ZKR and VK7ZRO and the current World Record is 1940 km. Les has previously made a contact on 432 MHz but has not made a claim. How about making an application this time, fellows? Congratulations for a fine effort Wally and Les.

C.A.R.E.

(Community Amateur Radio Events)

In world-wide radio magazines, one frequently reads of the splendid work done by amateur radio operators in emergencies relating to earthquakes, fires, sickness, lost persons, air/road/rail accidents etc. Such performances are almost a daily occurrence in the USA, but in Australia, fortunately, the need is seldom presented. But when it is, VK amateur radio operators too, can rise to the occasion.

There has recently come to our notice, rather belatedly, unfortunately, details of the splendid work done by Reg Ross VK3YD, during an emergency involving the Government radio station at Casey Base in the Gambier. Reg happened to be around at the "right time" — a time when radio communications failed between Casey Base and the Antarctic Division's Headquarters station in Melbourne. According to subsequent letters from the Director of the Division, and the OIC Casey Base, Reg won appreciative comment for "assistance given by VK3YD in the re-establishment of communications between both stations following the breakdown at Casey (station VNJ)".

It is understood that at the time of the emergency, Reg was operating SSB on 14 MHz.

Well done, Reg VK3YD.
Submitted by Eric Trebilcock.

QSP

BRIEFS

During a meeting between DARC and Federal German Post Office officials the W. German administration agreed to a change in official classification of the amateur radio service from "Private Operation" (which includes CQ) to "Technical Experimentation Operation". This decision will be put to the next meeting of the CEPT sub-group concerned. JARL has submitted an amateur radio service WARC 79 paper to their P. and T. Ministry.

Best wishes to the Radio Society of Sri Lanka upon celebrating its 25th anniversary.

AFTERTHOUGHTS

Please amend QSL information on page 54 of December issue — 3rd column: Tasmania Divisional Information:

QSL Bureau Postal Address:

G.P.O. Box 3710, Hobart 7001

QSL Manager:

Charles Harrison VK7CH, 95 Wentworth St., Bellerive 7018.

ELECTRONIC ENTHUSIASTS EMPORIUM

POPULAR INTEGRATED CIRCUITS IN STOCK

CA3012	CD4026	CD4724	LM3800N	MC1496K	UAA180
CA3013	CD4027	CD40097	LM381N	MC1590G	UA723C
CA3018	CD4028	CD40098	LM382N	MC14553	LM723
CA3028A	CD4029	CD40174	LM387N	MC1648P	ULN2200
CA3035A	CD4030	CD40175	LM395K	MC4044P	ULN2209
CA3039	CD4031	CD40192	LM555CN	OM902	ULN2211
CA3039	CD4032	CD40194	LM555H	SAJ110	74C00
CA3046	CD4033	CD40195	LM556N	SAK140	74C02
CA3053	CD4034	CD40196	LM562B	SD305DE	74C04
CA3059	CD4035	DM8097	LM565N	SD306DE	74C10
CA3060	CD4036	HEF see "CD"	LM566CN	SL415A	74C14
CA3079	CD4037	LM1007	LM567CN	SL425A	74C20
CA3080	CD4038	LM1144H	LM301AN	SL437D	74C25
CA3081	CD4039	LM1400	LM710CN	SL440	74C86
CA3082	CD4040	LM3044H	LM710CH	SL442	74C90
CA3083	CD4041	LM3054H	LM723N	SL447	74C154
CA3086	CD4042	LM307N	LM723N	SL449	74C160
CA3089E	CD4043	CD4051	LM725N	SL510C	74C162
CA3090E	CD4044	CD4052	LM733CH	SL512C	74C174
CA3091	CD4045	CD4053	LM733N	SL513C	74C182
CA3120E	CD4046	CD4054	LM741CH	SL620C	74C901
CA3127E	CD4047	CD4055	LM741CN	SL621C	74C925
CA3128E	CD4048	CD4056	LM747CH	SL622C	80C05
CA3130T	CD4049	CD4057	LM747CN	SL622C	MISC
CA3140T	CD4050	CD4071	LM748CN	SL624C	AL5352
CA3142	CD4051	CD4072	LM748N	SL630C	GL4484
CD4000	CD4052	CD4073	LM750N	SL640C	GL5253
CD4001	CD4053	CD4074	LM751N	SL641C	OL31
CD4002	CD4054	CD4075	LM752N	SL645C	RL4484
CD4003	CD4055	CD4076	LM753N	SL901B	SL5023
CD4004	CD4056	CD4077	LM754N	SL917B	FND357
CD4005	CD4057	CD4078	LM755N	SL1310	FND500
CD4006	CD4058	CD4079	LM756N	SL302B	9001
CD4007	CD4059	CD4080	LM757N	SP8505	9368
CD4008	CD4060	CD4081	LM758N	SP8515	9601
CD4009	CD4061	CD4082	LM759N	TAA300	NSN71
CD4010	CD4062	CD4083	LM760N	TAA300	NSN74
CD4011	CD4063	CD4084	LM761N	TBA570	TIL306A
CD4012	CD4064	CD4085	LM762N	TBA810A	11C90
CD4013	CD4065	CD4086	LM763N	TB1750A	85H90
CD4014	CD4066	CD4087	LM764N	TCA220	2102-2
CD4015	CD4067	CD4088	LM765N	TCA290A	2513N
CD4016	CD4068	CD4089	LM766N	TCA330P	S1883
CD4017	CD4069	CD4090	LM767N	TCA580	S50242
CD4018	CD4070	CD4091	LM768N	TCA730	MA1002
CD4019	CD4071	CD4092	LM769N	TCA740	7805CP
CD4020	CD4072	CD4093	LM770N	TDA1005	7824CP
CD4021	CD4073	CD4094	LM771N	UAA170	
CD4022	CD4074	CD4095	LM772N		
CD4023	CD4075	CD4096	LM773N		
CD4024	CD4076	CD4097	LM774N		
CD4025	CD4077	CD4098	LM775N		
	CD4078	CD4099	LM776N		
	CD4079	CD4100	LM777N		
	CD4080		LM778N		
	CD4081		LM779N		
	CD4082		LM780N		
	CD4083		LM781N		
	CD4084		LM782N		
	CD4085		LM783N		
	CD4086		LM784N		
	CD4087		LM785N		
	CD4088		LM786N		
	CD4089		LM787N		
	CD4090		LM788N		
	CD4091		LM789N		
	CD4092		LM790N		
	CD4093		LM791N		
	CD4094		LM792N		
	CD4095		LM793N		
	CD4096		LM794N		
	CD4097		LM795N		
	CD4098		LM796N		
	CD4099		LM797N		
	CD4100		LM798N		
	CD4101		LM799N		
	CD4102		LM800N		
	CD4103		LM801N		
	CD4104		LM802N		
	CD4105		LM803N		
	CD4106		LM804N		
	CD4107		LM805N		
	CD4108		LM806N		
	CD4109		LM807N		
	CD4110		LM808N		
	CD4111		LM809N		
	CD4112		LM810N		
	CD4113		LM811N		
	CD4114		LM812N		
	CD4115		LM813N		
	CD4116		LM814N		
	CD4117		LM815N		
	CD4118		LM816N		
	CD4119		LM817N		
	CD4120		LM818N		
	CD4121		LM819N		
	CD4122		LM820N		
	CD4123		LM821N		
	CD4124		LM822N		
	CD4125		LM823N		
	CD4126		LM824N		
	CD4127		LM825N		
	CD4128		LM826N		
	CD4129		LM827N		
	CD4130		LM828N		
	CD4131		LM829N		
	CD4132		LM830N		
	CD4133		LM831N		
	CD4134		LM832N		
	CD4135		LM833N		
	CD4136		LM834N		
	CD4137		LM835N		
	CD4138		LM836N		
	CD4139		LM837N		
	CD4140		LM838N		
	CD4141		LM839N		
	CD4142		LM840N		
	CD4143		LM841N		
	CD4144		LM842N		
	CD4145		LM843N		
	CD4146		LM844N		
	CD4147		LM845N		
	CD4148		LM846N		
	CD4149		LM847N		
	CD4150		LM848N		
	CD4151		LM849N		
	CD4152		LM850N		
	CD4153		LM851N		
	CD4154		LM852N		
	CD4155		LM853N		
	CD4156		LM854N		
	CD4157		LM855N		
	CD4158		LM856N		
	CD4159		LM857N		
	CD4160		LM858N		
	CD4161		LM859N		
	CD4162		LM860N		
	CD4163		LM861N		
	CD4164		LM862N		
	CD4165		LM863N		
	CD4166		LM864N		
	CD4167		LM865N		
	CD4168		LM866N		
	CD4169		LM867N		
	CD4170		LM868N		
	CD4171		LM869N		
	CD4172		LM870N		
	CD4173		LM871N		
	CD4174		LM872N		
	CD4175		LM873N		
	CD4176		LM874N		
	CD4177		LM875N		
	CD4178		LM876N		
	CD4179		LM877N		
	CD4180		LM878N		
	CD4181		LM879N		
	CD4182		LM880N		
	CD4183		LM881N		
	CD4184		LM882N		
	CD4185		LM883N		
	CD4186		LM884N		
	CD4187		LM885N		
	CD4188		LM886N		
	CD4189		LM887N		
	CD4190		LM888N		
	CD4191		LM889N		
	CD4192		LM890N		
	CD4193		LM891N		
	CD4194		LM892N		
	CD4195		LM893N		
	CD4196		LM894N		
	CD4197		LM895N		
	CD4198		LM896N		
	CD4199		LM897N		
	CD4200		LM898N		
	CD4201		LM899N		
	CD4202		LM900N		
	CD4203		LM901N		
	CD4204		LM902N		
	CD4205		LM903N		
	CD4206		LM904N		
	CD4207		LM905N		
	CD4208		LM906N		
	CD4209		LM907N		
	CD4210		LM908N		
	CD4211		LM909N		
	CD4212		LM910N		
	CD4213		LM911N		
	CD4214		LM912N		
	CD4215		LM913N		
	CD4216		LM914N		
	CD4217		LM915N		
	CD4218		LM916N		
	CD4219		LM917N		
	CD4220		LM918N		
	CD4221		LM919N		
	CD4222		LM920N		
	CD4223		LM921N		
	CD4224		LM922N		
	CD4225		LM923N		
	CD4226		LM924N		
	CD4227		LM925N		
	CD4228		LM926N		
	CD4229		LM927N		
	CD4230		LM928N		
	CD4231		LM929N		
	CD4232		LM930N		
	CD4233		LM931N		
	CD4234		LM932N		
	CD4235		LM933N		
	CD4236		LM934N		
	CD4237		LM935N		
	CD4238		LM936N		
	CD4239		LM937N		
	CD4240		LM938N		
	CD4241		LM939N		
	CD4242		LM940N		
	CD4243		LM941N		
	CD4244		LM942N		
	CD4245		LM943N		
	CD4246		LM944N		
	CD4247		LM945N		
	CD4248		LM946N		
	CD4249		LM947N		
	CD4250		LM948N		
	CD4251		LM949N		
	CD4252		LM950N		
	CD4253		LM951N		
	CD4254		LM952N		
	CD4255		LM953N		
	CD4256		LM954N		
	CD4257		LM955N		
	CD4258		LM956N		
	CD4259		LM957N		
	CD4260		LM958N		
	CD4261		LM959N		
	CD4262		LM960N		
	CD4263		LM961N		
	CD4264		LM962N		
	CD4265		LM963N		
	CD4266		LM964N		
	CD4267		LM965N		
	CD4268		LM966N		
	CD4269		LM967N		
	CD4270		LM968N		
	CD4271		LM969N		
	CD4272		LM970N		
	CD4273		LM971N		
	CD4274		LM972N		
	CD4275		LM973N		
	CD4276		LM974N		
	CD4277		LM975N		
	CD4278		LM976N		
	CD4279		LM977N		
	CD4280		LM978N		
	CD4281		LM979N		
	CD4282		LM980N		
	CD4283		LM981N		
	CD4284		LM982N		
	CD4285		LM983N		
	CD4286		LM984N		
	CD4287		LM985N		
	CD4288		LM986N		

Sideband Electronics Sales

Distributors of COMMUNICATIONS TRANSCEIVERS

HF TRANSCEIVERS

ASTRO - 200 digital solid state 200 W.P.E.P. **\$1000**

TRIO KENWOOD new model TS-520-S
160 to 10 M, with optional digital
readout connected externally. Can be
used as a frequency counter self contained
separately powered by 12 volt DC. **\$700**

TRIO KENWOOD model TS-820S AC only
160 to 10 M with digital readout. **\$1,100**

TRIO KENWOOD model TS-820 AC only
160 to 10 M. **\$930**

TRIO KENWOOD model MC-50 Microphone. **\$ 50**

TRIO KENWOOD model TS-600-A FM-AM.
SSB transceiver full 50-54 MHz coverage 10
Watt output variable from 1 Watt to full power.
VFO controlled AC-DC operation. Styling as
TS-700-A. **\$700**

TRIO KENWOOD model TR-7400 2 meter
FM transceiver 10 to 25 watts output.
Frequency range 144.00 to 147.995 MHz No.
of channels 800, Double conversion super-
heterodine sensitivity better than 0.4 UV for 20 DB. **\$440**

ICOM

VHF TRANSCEIVERS SSB

ICOM model IC-202 2 M SSB portable trans-
ceiver 144-144.4 MHz **\$215**

ICOM model IC-502 6 M SSB portable trans-
ceivers 52-53 MHz. **\$215**

ICOM IC-22-S synthesized 22 channel 2 M
transceiver 10 channel pre programmed.
Supplied with 50 extra diodes for the
programming. **\$269**

ICOM model IC-245 **\$450**

ICOM model IC-211 **\$750**

YAESU MUSEN model FT-101-E AC-DC
transceivers 10 to 160 M with speech processor **\$850**

YAESU MUSEN model FT-301. **\$960**

YAESU MUSEN model FT-301 - D **\$1140**

YAESU MUSEN model FT-301 - S **\$660**

YAESU MUSEN model FL-2100-B Lineal Ampl. **\$525**

YAESU MUSEN model FP-301 **\$165**

YAESU MUSEN FR-G-7 Uses Wadley loop princ. **\$300**

YAESU MUSEN FT221-R 2 meter all
mode transceiver. **\$628**

FREQUENCY COUNTERS

YAESU MUSEN model YC-500-E-S-J **P.O.A.**

AUSTRALIA'S SOLE DIST. OF KLM PRODUCTS

KLM SOLID STATE POWER AMPLIFIERS

(MHz) 144-148 PA10- 80BL 80 OUTPUT (watts)

" PA10-140BL 140 "

" PA10-160BL 160 "

" PA 2- 70BL 70 "

400-470 PA10- 70CL 70 "

PA 2- 12B 12 Watts

PA 2- 25BL 25 Watts **P.O.A.**

MARK MOBILE ANTENNAS

HW-80, 6' long for 80 M. **\$ 28**

HW-40, 6' long for 40 M. **\$ 25**

HW-20, 6' long for 20 M. **\$ 23**

Swivel mounts & chrome-plated springs for all **\$ 13**

CUSH CRAFT ANTENNAS

A144-11 11 Element 2M-Yagi **\$ 50**

A147-11 11 Element 2 M Yagi **\$ 50**

A147-20 combination horizontal vertical 2 M **\$ 75**

ANTENNA ROTATORS

Model CDR Ham-11 for all hf beams except
40 M **\$240**

Model CDR AR-22 L junior rotator for small
beams **\$ 75**

KEN model KR-400 for all medium size hf
beams with internal disc brake **\$120**

All models rotators come complete with 230-
volt AC indicator-control units.

6-conductor cable for

KR-400-500 **65 cents per metre**

COAX CABLE CONNECTORS **\$1.20**

PL-259 **\$1.20**

SO-239 Chassi Mount **\$1.20**

Male to male joiner **\$1.20**

Female to female joiner **\$1.20**

Angle connector **\$2.00**

T-connector **\$2.50**

COAX CABLE

RG-8 - U foam filled per metre **\$1.20**

SWR METER

Twin meter model: Y.M. - I.E. 3.5 to 145 MHz

prof quality **\$ 28**

DRAKE TV - 3300 TVI lowpass filter **\$ 34**

SSR-1 Receivers **\$270**

CRYSTAL FILTER, 9 MHz, similar to

FT-200 ones. With carrier crystals. **\$ 35**

APOLLO 3 position co-ax switches **\$ 15**

All prices quoted are net SYDNEY, N.S.W., on cash-with-order basis, sales tax included in all cases, but
subject to changes without prior notice. ALL-RISK INSURANCE from now on free with all orders over
\$100; small orders add 50c for insurance. Allow for freight, postage or carriage; excess remitted will be
refunded.

Sideband Electronics Sales

For personal attention: **24 KURRI STREET, LOFTUS**

P.O. BOX 184, SUTHERLAND, 2232

OPEN ON SATURDAYS TILL 12 NOON

TELEPHONE: 521-7573

PETER SCHULZ, VK2ZXL

**DRAKE**

C-Line Amateur Equipment



Drake R-4C

Solid State Linear permeability-tuned VFO with 1 kHz dial divisions. Gear driven dual circular dials. High mechanical, electrical and temperature stability.

Covers ham bands with crystals furnished. Covers all of 80, 40, 20 and 15 meters, and 28.5-29.0 MHz of 10 meters.

Covers 160 meters with accessory crystal. In addition to the ham bands, tunes any fifteen 500 kHz ranges between 1.5 and 30 MHz. 5.0 to 6.0 MHz not recommended. Can be used for MARS, WWV, CB, Marine and Shortwave broadcasts.

Superior selectivity: 2.4 kHz 8-pole filter provided in ssb positions. 8.0 kHz, 8-pole selectivity for a-m. Optional 8-pole filters of .25, .5, 1.5 and 6.0 kHz bandwidths available.

Tunable notch filter attenuates carriers within passband.

Smooth and precise passband tuning.

Transceive capability, may be used to transceive with the T-4X, T-4XB or T-4XC Transmitters. Illuminated dial shows which PTO is in use.

Usb, lsb, a-m and cw on all bands.

Agc with fast attack and two release times for ssb and a-m or fast release for break-in cw. Agc also may be switched off.

New high efficiency accessory noise blanker that operates in all modes.

Crystal lattice filter in first i-f prevents cross-modulation and desensitization due to strong adjacent channel signals.

Excellent overload and intermodulation characteristics.

25 kHz Calibrator permits working closer to band edges and segments.

Scratch resistant epoxy paint finish.



Drake MS-4

\$47

Drake MS-4 Matching Speaker for use with R-4, R-4A, R-4B and R-4C Receivers. (Has space to house AC-3 and AC-4 Power Supplies).



Drake T-4XC

\$695

Solid State Linear permeability-tuned VFO with 1 kHz dial divisions. Gear driven dual circular dials. High mechanical, electrical and temperature stability.

Covers ham bands with crystals furnished. Covers all of 80, 40, 20 and 15 meters, and 28.5-29.0 MHz of 10 meters.

Covers 160 meters with accessory crystal. Four 500 kHz ranges in addition to the ham bands plus one fixed-frequency range can be switch-selected from the front panel.

Two 8-pole crystal lattice filters for sideband selection.

Transceivers with the R-4, R-4A, R-4B, R-4C and SPR-4 Receivers. Switch on the T-4XC selects frequency control by receiver or transmitter PTO or independently. Illuminated dial shows which PTO is in use.

Usb, lsb, a-m and cw on all bands.

Controlled-carrier modulation for a-m is com; compatible with ssb linear amplifiers.

Automatic transmit-receive switching. Separate VOX time-delay adjustments for phone and cw. VOX gain is independent of microphone gain.

Choice of VOX or PTT. VOX can be disabled by front panel switch.

Adjustable pi network output.

Transmitting agc prevents flat-topping.

Meter reads relative output or plate current with switch on load control.

Built-in cw sidetone.

Spotting function for easy zero-beating.

Easily adaptable to RTTY, either fsk or alsk.

Compact size; rugged construction. Scratch resistant epoxy paint finish.

High Pass Filters for TV Sets

provide more than 40 dB attenuation at 52 MHz and lower. Protect the TV set from amateur transmitters 6-160 meters.



Drake TV-300-HP

For 300 ohm twin lead **\$13**



Drake TV-75-HP

For 75 ohm TV coaxial cable; TV type connectors installed **\$17**



MN-4 (Model No. 1507)

\$165

MN-2000 (Model No. 1509)

\$310

Drake MN-4 & MN-2000 Matching Networks

- **Integral Wattmeter** reads forward power in watts and VSWR directly; can be calibrated to read reflected power • **Matches 50 ohm transmitter output** to coax antenna feedline with VSWR of at least 5:1 • **Covers ham bands 80 thru 10 meters • Switches in or out** with front panel switch • **Size:** 5 1/2" H, 10 1/4" W, 8" D (14.0 x 27.3 x 20.3 cm), MN-2000, 14 1/4" D (36.5 cm).
- **Continuous Duty Output:** MN-4, 200 watts; MN-2000, 1000 watts (2000 watts PEP) • **MN-2000 only:** Up to 3 antenna connectors selected by front panel switch.

TVI Filters

Low Pass Filters for Transmitters

have four pi sections for sharp cut off below channel 2, and to attenuate transmitter harmonics falling in any TV channel and fm band. 52 ohm, 50-239 connectors built in.



Drake TV-3300-LP

1000 watts max. below 30 MHz. Attenuation better than 80 dB above 41 MHz. Helps TV i-f interference, as well as TV front-end problems. **\$32**



Drake TV-5200-LP

200 watts to 52 MHz. Ideal for six meters. For operation below six meters, use TV-3300-LP or TV-42-LP. **\$32**



Drake TV-42-LP

is a four section filter designed with 43.2 MHz cut-off and extremely high attenuation in all TV channels for transmitters operating at 30 MHz and lower. Rated 100 watts input. **\$19**

Prices shown include Tax

Write, 'phone or call for technical information.

P.O. Box 30, Concord, N.S.W. 2137.
Telephone: 736-2888.
Melbourne: P.O. Box 107, Mt. Waverley, Vic. 3149.
Telephone: 233-4044.
Adelaide: 42-6666; Brisbane: 392 2884.
Perth: 25-3144.

ELMEASCO**Instruments Pty. Ltd.**

1977 REMEMBRANCE DAY CONTEST RESULTS

WINNER - VK1 DIVISION

	a	b	c	d	e	2AEC	25	17	2ASJ	10	7	VK3 OPEN					
VK1	35	144	1398	15647	111357	2MEJ	24	18	2AAH	9	9						
VK5	138	581	1975	60287	105739	2BET	23	9	2VJ	8	8	3WW	820	519	3ASR	262	120
VK5/VK8	238	907	1880	78778	88828	2ZVN	23	23	2AWF	8	8	3YF	383	202	3PR	134	50
VK7/VK8	46	251	1450	22179	88823	2NJV	21	17	2VEH	8	8	3BSR	331	152	3AYL	120	55
VK4	170	851	1753	55844	67492	2CMA	19	17	2FD	7	7	3AMD	295	107	3NCL	57	34
VK3	91	1919	842	27607	15383	2MR	19	17	2NCU	7	6						
VK2	138	2383	875	25914	11751	2BLI	18	18	2VCM	7	7						

a—Logs received

b—Licence

c—Average top 5 logs

d—Total points from sections (a), (b), and (c)

e—Trophy score.

In the following detailed scores, the first figures are the points scored and the second are contacts made.

VK1 PHONE

1GB	1521	520	1TH	116	44
1PM	1125	325	1EO	104	25
1KP	1056	310	1ZCB	94	92
1°C	971	344	1VP	93	85
1 CA	913	372	1ZPC	90	83
1 K	823	307	1ZDF	90	83
1TT	746	235	1VW	81	77
1TD	717	202	1EP	59	59
1RH	675	237	1JE	56	14
1TR	560	200	1ZAR	41	39
1QJ	484	153	1DR	27	7
1LF	395	123	1YR	24	24
1NE	385	126	1CR	11	11
1JJ	147	145	1ML	11	11
1JN	124	118	1ZJR	6	6

VK1 CW

1PG	1140	158	1VK	246	30
-----	------	-----	-----	-----	----

VK1 OPEN

1ADP	2034	622	1WI	232	135
1AD	779	233			

VK2 PHONE

2BAM	753	417	2NBQ	113	58
2AGF	718	360	2BSG	108	70
2BDT	705	360	2AGS	102	51
2LE	690	403	2BCT	98	56
2AHV	664	340	2ACH	90	54
2BGF	651	345	2AKH	90	57
2BGI	595	385	2NEP	90	41
2VLD	506	250	2ACK	88	45
2P	453	273	2BUC	87	52
2V	450	246	2SP	85	51
2BGL	377	225	2APU	84	45
2AUF	360	199	2NDP	80	37
2OC	359	170	2SB	79	29
2BDB	343	230	2AQ	78	43
2BPP	329	160	2CS	78	40
2BJN	314	154	2NCD	77	45
2ALZ	318	151	2UJ	74	45
2BJN	314	154	2ASH	70	19
2BKE	274	154	2QV	59	43
2AT	241	131	2BMD	59	16
2BMX	228	110	2UQ	56	42
2ACB	227	128	2AIB	55	54
2PT	220	87	2BJK	53	18
2ABO	214	113	2WW	51	23
212	212	108	2BSB	47	35
2AKO	210	123	2RX	46	21
2EY	202	140	2CU	44	19
2NIP	195	123	2ZSG	44	44
2AUL	194	103	2ACZ	42	18
2PF	168	100	2ASE	42	25
2ACT	162	101	2ZIA	39	39
2AHT	160	75	2AWX	37	37
2WT	158	75	2NFA	36	18
2JS	139	61	2BAG	34	25
2JL	129	79	2ZAD	30	30
2ZVB	124	42	2ZFF	30	30
2AKU	127	75	2BHD	29	13
2NGM	125	84	2ZOK	27	27
2BDN	123	82	2IJ	25	10

VK2 CW

2CX	888	227	2IC	178	41
2EL	754	202	2BBW	122	33
2DL	730	187	2VM	88	25
2OI	580	122	2JY	80	29
2AQF	482	116	2HC	70	20
2EL	466	112	2ZC	40	10
2IV	330	70	2JM	20	10
2GT	314	87	2RJ	19	7
2WE	198	46			

VK2 OPEN

2BKO	1168	585	2HQ	145	59
2OC	1017	415	2VA	113	55
2AOA	559	325	2DO	72	40
2FN	452	169	2AAC	71	27
2PA	425	156	2HZ	65	20
2ALX	375	258	2BNW	46	24
2NAW	282	146		42	30
2BLK	240	100			

VK3 PHONE

3HT	1230	754	3KK	178	100
3BDL	989	637	3NBP	175	100
3WP	921	558	3ZWM	172	173
3ANA	842	553	3ZJ	166	60
3AQZ	840	501	3ZYL	163	63
3ADW	784	445	3ADU	158	122
3OT	745	367	3AIE	155	76
3DF	731	548	3ZUO	148	148
3AKK	684	300	3AGH	140	57
3AFE	641	387	3NAC	133	72
3BBS	622	343	3AAW	130	80
3NOK	608	405	3NDF	123	66
3DS	588	311	3AND	117	66
3BCK	578	305	3ZI	100	100
3LP	576	292	3OD	94	66
3ANM	570	428	3ACB	77	54
3SM	535	300	3ARS	76	61
3BIR	546	272	3AEF	59	40
3ARK	443	240	3BER	53	53
3AYF	382	250	3OG	47	27
3BBH	360	221	3ZPU	46	46
3APZ	348	226	3WQ	42	20
3XF	340	187	3BMV	41	41
3ASN	292	136	3BCH	35	25
3OZ	270	154	3BIT	30	30
3ZTC	255	256	3NQC	28	10
3ZAO	228	228	3BIS	27	20
3AM	220	127	3AAJ	26	12
3LV	219	107	3KT	24	23
3BCC	217	143	3NZ	12	12
3YQ	211	88	3ZFI	11	11
3BHU	188	251	3ARA	10	6
3WJ	157	115	3ZVI	10	10
3NB	187	709			

VK3 CW

3AYO	518	206	3BDH	252	52
3YK	648	156	3ANJ	114	30
3DG	574	150	3KS	114	30
3FC	516	139	3NAY	114	31
3B	424	111	3AZT	108	26
3J	416	110	3JI	80	23
3VF	338	85	3ABR	80	20
3NK	264	70	3FG	82	23

VK4 PHONE

4YS	1823	749	4EP	111	30
4LP	1513	625	4LK	109	42
3YQ/4	1415	418	4GM	103	48
4AVL	1116	498	4QW	102	35
4MW	1107	401	4ABG	102	58
4ADC	1107	548	4TO	95	54
4TE	1070	489	4AET	85	34
4RH	838	255	4LO	93	26
4DO	835	308	4HM	92	36
4ADR	713	304	4AZE	92	32
4ADT	705	302	4NP	91	40
4JP	703	263	4NO	89	26
4AEV	654	264	4HW	85	33
4CB	638	272	4ZL	76	78
4CI	615	226	4ZIG	66	68
4BW	601	256	4EH	61	61
4PF	598	221	4ZX	59	43
4ADM	582	249	4ZCH	55	55
4NDE	539	183	4NDV	54	24
4AAK	515	200	4ZCE	51	51
4BJ	502	201	4ZGB	51	51
4BD	479	183	4ZAF	50	50
4RT	445	160	4ZMC	50	50
4AKT	443	212	4ANW	48	12
4E	435	168	4ZTV	48	48
4IO	410	202	4ZGA	46	49
4WIT	387	142	4GS	44	13
4FX	364	129	4IQ	42	40
4YL	358	117	4PL	41	41
4UJ	333	334	4TS	41	20
4NCA	309	122	4ZFR	34	54
4ZIT	292	292	4NAX	33	9
4RP	301	100	4NBZ	32	11
4ANJ	281	70	4ZPP	32	32
4AR	278	91	4ZC/4	31	11
4FU	277	100	4LR	31	8
4RP/4	269	95	4NAB	31	13
4NAK	265	110	4ZJR	30	30
4ZBC	263	263	4BR	28	6
4APG	262	136	4DH	27	27
4VU	260	131	4LU	27	8
4PU	254	78	4TK	27	8
4ZBV	246	246	4NV	26	28
4ZD	242	79	4VS	24	24
4OX	236	75	4ZFA	24	24
4CZ	225	65	4ZMD	21	21
4A	219	75	4ZPF	20	20
4RA	197	62	4EB	18	18
4RZ	197	71	4ZCV	18	18
4ZSH	194	194	4RG	16	16
4ES	189	21	4TL	16	10
4GI	170	76	4AF	15	5
4NWD	170	77	4ACM	14	14
4CW	155	57	4XV	13	13
4FN	155	81	4PR	12	6
4AMO	153	67	4ZWB	10	10
4L	149	45	4ZTKW	10	10
4ZRI	145	147	VK4	10	10
4VY	143	110	4HS	8	8
4DY	132	60	4ZBH	8	8
4ZJM	131	131	4MO	7	7
4W	130	50	4OW	7	7
4ZHW	123	124	4OM	6	6
4HN	118	118	4ZWR	5	5
4AL	114	53			

VK4 CW

4XA	1408	253	4XJ	302	55
4XK	1338	222	4PN	292	43
4XV	1116	173	4LV	110	25
4AXJ	624	99	4HH	30	5
4FJ	326	52	4NTW	30	6
4CJ	312	55	4CN	20	7
4ARL	272	50			

4H	2270	668	4LZ	329	119
4HE	2160	681	4LG	308	95
4UX	1343	411	4NAE	298	139
4DT	1268	583	4JH	286	63
4LT	1260	326	4DF	280	103
4AR	1116	488	4SO	274	89
4AG	1101	391	4HK	242	150
4AGP	1076	301	4ABS	164	61
4RF	906	300	4NB	150	59
4WL	830	165	4OK	132	35
4XY	788	210	4RO	89	53
4UG	402	141	4PV	59	41
4UC	485	133	check log		
4AK	366	81	4ABD		

5QX	1807	829	5NJP	186	94
5AAA	1655	666	5ZRA	179	179
5BI	1640	688	5GW	176	81
5GY	1259	535	5EF	174	60
5MM	1066	460	5CW	172	65
5NJ	963	401	5ZAR	172	172
5HI	958	361	5RR	168	82
5MC	856	34	5HFC	166	

SFE	877	421	SWF	164	73
SFD	874	345	SNAC	182	74
SLP	866	347	SZQ	161	100
SDV	856	428	SHM	154	60
SNX	836	367	SLC	151	61
SZH	790	345	SZAT	150	150
STY	768	374	SZIC	148	148
SQV	746	292	SZIM	148	148
SLN	692	300	SSE	147	89

5KR	512	339	5QP	130	103
5US	512	246	5BB	129	45
5GL	509	344	5ZUJ	127	128
5JQ	485	311	5ZBC	125	125
5NA	478	232	5NGD	124	47
5VE	468	178	5ARC	121	121
5AIB	461	200	5OC	119	60
5ZE	454	241	5CL	117	71
5NLT	450	212	5NIM	116	56

SN	SN	SN	SN	SN
5N1	405	210	5GF	107
5QS	405	308	5ZGP	106
5KG	404	300	5WC	105
5NN	380	150	5ED	102
5ST	369	151	5ZBM	102
5ZBI	351	364	5ZAJ	101
5RV	355	144	5ZKK	100
5NXP	341	192	5ZTG	99

SGP	319	149	5R1	94	33
5ZWR	316	316	5RJ	93	34
5SG	311	146	5IM	92	91
5ZT	308	150	5YY	89	30
5ZJG	308	308	5ZAC	89	89
5ACE	302	286	5ZGB	88	88
6DI	239	100	5QW	87	29
5NF	292	120	5XU	87	30
5NRC	288	309	5KH	86	30

5IT	265	100	5DJ	70	30
5NZ	264	111	5DF	67	22
5LL	263	113	5OF	66	66
5ZB	259	103	5EP	63	30
5ZU	253	85	5TH	62	33
5NAH	248	130	5AC	61	20
5DK	247	109	5GM	61	26
5CY	237	90	5ZME	61	61

5CH	225	82	5LT	51	33
5ZBU	222	222	5NBW	49	31
5GZ	216	92	5WN	49	31
5VV	213	99	5WN	48	30
5ZSA	210	210	5YN	48	16
5ZMH	208	208	5ZR	48	16
5HN	196	95	5ZFJ	48	48
5FL	193	65	5CA	46	20
5LO	191	82	5GU	44	44

5ZRF	40	40
5UA	37	36
5HW	36	12
5AG	36	12
5GJ	34	15
5PB	34	17
5ZBY	34	34
5ZBW	31	31

SKL	1100	210
SOR	978	188
SLI	838	163
SJM	670	150
SBN	492	100
SAU	310	54
SOO	282	50

5EN	230	31
5IU	224	50

VK5 OPEN

5EN	1620	645
5WV	1067	450
5LE	909	309

5CV	470	115
5PK	432	145
5ZSD	391	383
5RG	388	98
5RC	378	76
5ZCF	367	355

6OR	1983	560
6TV	1758	520
6LK	1657	480
6BV	1403	401
6JP	1363	404
6HA	1327	594
6DA	1266	507
6KW	848	284
6KD	818	238

6NAY	579	203
6ST	539	168
6AN	521	271
6VW	501	177
6WL	478	130
6IW	455	260
6AO	451	141
6FS	451	128

VK6 PHONE		
6NBB	165	67
6CU	163	158
6ZGG	154	154
6CB	150	104
6NBK	147	54

6FM	129	34
6NAM	116	48
6NE	112	35
6ZDN	111	111
6GL	103	32
6AV	102	32
6QR	100	28
6XY	99	35

6ZFU	86	87
6ZEX	85	85
6RL	84	24
6NAE	78	41

5ZPP	22	22
5ZAY	18	18
5CJ	16	8
5CX	16	16
5NY	13	13
5ZNU	13	13
5IX	11	11
5ZPD	9	9
5ZPM	-	-

5HO	220	40
5NBB	202	46
5KU	174	30
5KI	168	32
5HR	154	29
5OR	144	30
5LL	116	28

5RK	310	92
5TQ	282	124
5EM	253	74

5OT	67	22
5NLF	47	25
5ME	37	31
5RP	24	20
5EU	23	14

6DY	382	133
6NL	363	102
6HU	343	243
6KC	342	87
6DH	339	101
6TP	334	243
6NAO	327	114
6NBZ	325	106
6RV	316	98

6DT	244	76
6EB	219	104
6BT	213	65
6JY	187	90
6DZ	182	59
6LG	180	157
6NC	170	51
6DO	168	60

6ZKY	74	74
6TU	73	22
6AU	70	70
6FB	69	34
6JH	67	20

6MM	57	58
6ZBB	56	56
6CN	52	53
6NAZ	51	24
6NAC	43	12
6NS	36	25
6ZCU	34	34
6ML	30	30

6AWI	20	6
6KJ	19	19
6JA	17	9
6ZKV	17	17

6WT	1302	173
6AQ	1254	164
6HQ	1252	255
6VK	1126	149
6RS	822	112

6ED	1661	350
6RU	1516	372
6YL	1509	630
6JX	1331	450
6QI	1200	338
6CW	1132	420
6IC	988	444
6BD	860	263

6KK	585	166
6KR	367	101
6GA	357	54
6NAG	353	106
VK7 PHONE		
7HL	1431	509

7KH	787	260
7GW	775	262
7NOW	772	317
7WI	691	287
7SF	676	250
7JU	447	155
7DK	427	126
7SG	398	134
7ET	338	185

7KK	179	67
VK7 CW		
7RO	1194	209
7CH	1106	180
7HE	944	170
7JB	520	81

7AZ	2224	836
7ZZ	307	49
7AL	299	65

VK3 PHONE

8FB	2437	629
-----	------	-----

BCO	859	251
BCC	664	143
VK8 CW		
BRB	1188	152
BHA	1016	125

0NT	916	152
VK0 OPEN		
DCC	1558	208
P29 PHONE		

P29 OPEN

9EJ	863	137
-----	-----	-----

8AJ	818	1
8JF	706	1
8SM	550	
8RM	230	
8FI	94	

6PH	231
6LP	224
6JK	218
6NK	211
6CR	160
6KY	142
6LJ	135
6WI	127
6WX	116

6GS	61
6PD	44
6IQ	34
7LS	151

7PH	95
7ZIE	81
7ZGF	62
7NFR	59
7HB	56
7ZKC	47
7AB	46
7JD	38
7LH	32

7AX	5
7BY	476
7ZO	162
ZGV	24

7PF	273	1
7LZ	143	1
BCW	669	1

8ZTS	42	4
8ZBD	12	5
8SU	900	1

0AC 1212 1

9NRP

ZL PHONE

12G	144 43	4MG	617 212
8AG	82 26	4OP	143 43
37X	122 40	4CT	36 12

ZL CW

2MM	654 106	4HA	1228 206
-----	---------	-----	----------

ZL OPEN

16Q	1977 438	4BE	854 228
1ACL	1038 301	4IJ	565 176
18QD	650 196		

RECEIVING OPEN

VK2	G. Schofield	567 308
	P. Anglow DXL2-PMA	546 201
	I. Theodore DXL-NTI	292 175
	J. Watson	242 117
	R. Browne DXL2-BEQ	204 116
	C. Maxworthy DXL2-NDX	120 60
	P. Hannelly DXL2-PCIH	36 18
	N. Stollman DXL2-MUD	11 6
VK3	E. W. Trebilcock L30042	572 156
	M. J. Stephenson L30848	547 393
	E. A. Phillips L30647	302 195
VK4	B. G. Roche ORS 38670	656 251
VK5	R. Whitford	1693 728
	A. D. Drexel	368 145
	R. G. Edmeades L50122	342 159
	R. Warrington	257 252
	J. Warrington (Mrs.)	253 254
	D. Warrington	100 100
VK6	F. H. Price L60032	1219 333
	J. D. Smith L62276	525 105
	J. Byrne	298 101
	R. D. Boyd L60136	170 65
	D. Smedley L60101	35 35
VK7	G. Mutton	555 205
P29	K. S. Viney	1517 316

CONTESTS

Kevin Phillips, VK3AQQ

Box 67, East Melbourne, 3002

The results of last year's Contest which were published in January AR showed 30 logs submitted by Australian participants.

In recent international CW contests, many unfamiliar firsts from VK1, VK4 and VK8 have been heard making a great impact on the DX fraternity. These operators would find the Commonwealth (BERU) a very rewarding activity. The scoring system is a good one — chasing bonus points apart from contact points is a great interest in itself as well as a key also to success. 10 and 15 metres are still on the improve and will be the bonus bands.

Publicity for BERU has been promised in "Break In" so there should be plenty of ZLs about as a result.

Time: 1200 GMT Saturday 11th March, to 1200 GMT Sunday 12th March.
Mode: CW only 3.5 to 28 MHz. Call is CQ BERU.

Eligible entrants are radio amateurs licensed to operate in British Commonwealth call areas. In our region, Lord Howe VK2, Willis VK4, Christmas VK9, Cocos VK9, Norfolk VK9, Heard VK0, Macquarie VK0, and Australian Antarctica, as well as VK1-8, are all separate contest areas.

Two trophies have been presented for competition between VK stations — a silver medalion for the highest VK scorer in the official RSGB results and a bronze medalion for a middle placed VK scorer based on total VK entries divided by two, that is for 34 entries, to 17th placing, for 53 entries, to 27th placing. Last year's trophy winners were VK5NO and VK7JB.

SCORING: 5 points for contest exchange, plus 20 bonus points for 1st, 2nd and 3rd contact with each call area other than one's own (there are 111 in all, with G, GW, GM etc. counting as a single area) — exotic prefixes, A2, C6, 8P, 8L, etc., are the rule rather than the exception.

LOGS: Separate logs are required for each band showing columns — 1. Date and time GMT; 2. Station worked; 3. NR sent; 4. NR received; 5. Band; 6. Leave blank; 7. Contact points claimed; 8. Bonus points.

Each band log should be separately totalled and should include, at the end, a check list of areas worked on the band. Separate band totals should be added together and the total claimed score entered on a cover sheet, giving particulars of station, QTH, equipment, power, and a declaration that the rules and spirit of the contest have been observed.

Entries may be single or multi-band. Single band entries should claim entries on one band only, but submit details of contacts on other bands for checking only. Entries should be addressed to

D. J. Andrews G3MKJ,
18 Downview Crescent, Uckfield,
East Sussex, England TN22 1UB.
Closing date: 15th May 1978 (by airmail, please).

BOOK REVIEW

RADIO AMATEURS' EXAMINATION QUESTIONS AND ANSWERS —

Compiled by the RSGB Education Committee
This book contains a set of typical questions and model answers. The questions are from past UK amateur examinations.
The standard and scope of the questions and answers are similar to the local requirements with the exception of the Regulations section.

The answers are well laid out and provide a good idea of the standard required and cover the likely topics well.

Taken with other material this book should be useful both to those instructing classes and to students. Whilst not exactly the same as the local questions there is a great deal of common ground and the contents provides a very useful guide and would be a worthwhile book.

It should be available from booksellers and WIA Maggubs shortly and is recommended.

Dick Smith's Australian CB Radio Handbook. Price \$3.95.

On first receipt of this book, one was a little dubious right from the start regarding the contents.

I admit that I first read it in private where no other amateur could see me for fear of castigation and being called a traitor.

From an amateur's point of view the book tells you nothing new, but for a prospective CBr there is a complete resume of the whole CB system in Australia, and this is the primary object of the book anyway.

An information packed non-technical 128 page handbook published by Howells and contains answers to the questions on CB likely to be asked.

The book elaborates on: What CB is all about. Types of rigs. What to watch for when buying a rig. Licensing requirements. Australian system and U.S. system. Accessories available. Jargon, codes, data, etc. NCRA, CREST, emergency use, CB clubs. Glossary of technical and CB terms.

There is even an excellent information page on Amateur radio.

With so much confusion and debate on CB at the present time, the book has made an excellent inroad to the Australian scene, and to my knowledge is the only CB book that does so. All other books on CB are related to the American system.

The only criticism one could level is the use and encouragement of the 10 code, and the proliferation of the jargon, but I guess that is something we have to live with.

To the new CBr (and who possibly may upgrade to amateur radio), I recommend this book for serious consideration.

The book is available from all Dick Smith stores and dealers, and shortly through newsagents and other CB specialist stores.

VK3UV

SITUATION VACANT

TECHNICIAN

Applications invited for position of a Technician for position of a Technician to supervise working of Amateur Radio transmitters and to carry out repairs on valve and solid-state RF and VHF equipment. Applicants must apply in writing stating age, education and experience, previous places of employment during past 10 years, whether currently employed, etc. Must be experienced in modern digital and logic RSGB/RSGB communication techniques. Reply with copies of references to: Manager, Personnel — Ball Electronics Services, 60 Shannon St., Box Hill Rd, VIC, 3169.

ADVERTISEMENT

A further stock of VASO equipment has arrived including PMS-7, PT-101B, PT-200, PT-3010, PL-2500, etc.

PMS-7 Receiver	\$130
PT-101E Transceiver	\$649
PT-7 Mobile 5' vwp	\$578
PT-101 3M 1' vwp	\$575
PT-77-100 1' vwp	\$608
PT-101D Transceiver	\$1169
PL-2100B Linear	\$578
PT-2118 2m Transceiver \$659 (or \$750 with 10g-headset adaptor)	
PT-227 2m 1' vwp	\$375
QPS-20 World Time Clock \$23	

Some specials for February, while they last - greatly reduced (we are running short of stock)

PT-200 6m 1' vwp	\$399
PT-223 2m 1' vwp	\$159
QPS-3325 27 Mcz 250/AM (converts to 20 Mcz band)	\$1049
2m meters from	\$15 to \$75

Antennas, mixers, LP filters, baluns, clocks, Morse keys, Antenna amplifiers in fact just about everything to enable you to set up the COMPLETE AMATEUR STATION!

Prices and specifications subject to change without prior notice.

Prices include Sales Tax.

Freight is extra.

Ball Electronics Services

60 SHANNON STREET,

BOX HILL ROAD, VIC 3169

TEL. 91-2233

LARA

Ladies Amateur Radio Association

February again, and "Season's Greetings" to those who are doing exams this month, especially those YLs who are attempting either AOLPC or telegraphy (otherwise known as the P&T hurdles).

Contrary to former advertising (see January AR) this article is not about a well-known YL operator. Instead we announce the results of the VK3 LARA AGM and introduce a YL who is about to become well known, as our new State President of ARA, Heather Seddon VK3ZEB. Heather is one of the longest-standing members of LARA in VK3 but may not be well-known outside Victoria as she doesn't yet have a licence. She has come up on air on OM Ray's call, and they work as a team to handle the paper-work of contests, such as the RD Contest. Heather is hoping to start working for a licence of her own soon. As minutes secretary over the previous months in LARA, she has done such a superb job that all previous minute-takers have been put to shame, so best wishes to Heather as she takes on the job as President.

Our new Vice-President is a well-known (if only recently licensed) YL, Mavis VK3BIR. Norma VK3AYL continues as the excessively hard-working Newsletter Producer and general correspondence handler and Heather VK3NFIY is carrying on as Treasurer. Listeners to WIA Broadcast in VK3 will also hear Heather's notes on Sunday mornings as she has very kindly offered to take over that part of the publicity job from me.

On the national scene, the first edition of the newsletter for this year is in production and should be out soon/eventually (strike out which does not apply). The novice sdx parties are proceeding and Tuesday has been suggested as a suitable evening for this net. Suggestions from intending participants should be directed to Mavis VK3BIR where they will be warmly welcomed.

Speaking of warm welcomes, these are extended to any YL who wishes to join our growing organization. Writing to either Norma VK3AYL or to LARA care of the WIA in Victoria for to your own State LARA Co-ordinator) will result in somebody getting in touch fairly quickly.

33's — Kate Duncan.

HMADS

- Eight lines free for all WIA members.
- £9 per 3 cm for non-members.
- Copy in typescript please or in block letters to P.O. Box 150, Toorak, Vic. 3142.
- Commercial advertising is excluded.
- Repeats may be charged at full rates.
- Closing date: 1st day of the month preceding publication. Cancellations received after about 12th of the month cannot be processed.
- QTHR means the advertiser's name and address are correct in the current WIA Radio Amateurs Call Book.

FOR SALE

Alpha 374 self-contained desk top bandpass linear PA, 3-30 MHz, no tune up, instant band change, or manual tune position, uses three Eimac 8874 ceramic triodes, carrier output in excess of 1900W, continuous, duty, brand new, in factory sealed carton. \$1850. James Goodger VK2JO. Ph. (02) 88 2981.

Motor Generator, Air Ministry power unit type 34 (type 30). Nominal I/P 9.3V DC, O/P (1) 220V DC at 0.11A; (2) 7.2V DC at 13A. Can be run at 12V DC input to about 250V DC output at higher than nominal output current. Almost new, in case, complete with filters, relay, etc., \$10. VK3BKB, QTHR. Ph. (03) 570 8984 A.H.

Drake R-4C RX, serial No. 19190, current model, as new condition, absolutely no catches or faults, complete with extra 160m and 10m xils, passband tuning, notch filter, double xil filter system, etc. Used rarely for occasional listening, never part of active station. With original packing, manual, etc., \$525 cash. Ian Cousins VK5IK. Ph. Eudunda 252.

Heathkit SB620 panadaptor/spectrum analyser with handbook. IF range 455 kHz to 6 MHz, \$50. R. Graham VK3BQJ, QTHR. Ph. (02) 442 0122.

Eico Tri-Band SSB/AM/CW Transceiver, 80-40-20. Model 753 with built-in power supply, mikes, all handbooks and circuits, \$270. VK3ATP, QTHR. Ph. (03) 25 6022.

"Electronics Australia" magazines from 1969 to 1973 approx., plus other miscellaneous electronic magazines and books, \$10 the lot. Ph. (03) 89 4853 A.H.

Yaesu Receiver FRG7, less than 1 hour use, \$280; Hy Gain Antenna, vertical self supporting 10-00m, tower section 25 ft., total height 50ft., brand new, original packing, will deliver Melbourne suburbs, \$250; Yaesu Transceiver FT21B, xials, 6 channels, as new ex deceased estate, \$200. VK3SS, QTHR. Ph. (051) 47 2265.

Toroids as on p581 of 1977 ARRL handbook; take legal power 3-30 MHz, \$7.55 ea. plus p&c 40c for one, 60c for two. VK3AGF, QTHR. Ph. (03) 379 6524.

Kenwood TS660 6m Transverter, for use with TS520, new condition, complete, including built-in AC power supply and original packing, \$185.00. VK3KX, QTHR. Ph. (03) 469 4200, (03) 652 8110 bus.

Kenwood QR-666 Comm. Rx, excellent condition, very stable freq control, ideal stand-by Rx, owner upgrading, as new cond., \$150.00. Terry VK2ALG, QTHR. Ph. (080) 21 3288 or (080) 25 3292 A.H.

ICOM IC202 2m SSB, very little use, \$150. S. Ward VK2SW, QTHR. Ph. (059) 21 2125 bus, (059) 22 6082 A.H.

Rotator Coil-Spindle Ham II with 240V AC, control box, complete with 100 ft. of Belden rotor cable, in use 6 months, excellent condition, complete with owners manual, \$200. Hy-Gain 204BA, 4 el. 14 MHz yagi with Hy-Gain BN-66 matching balun and 100 ft. RG8U low loss American cable, \$225. VK2JO, Ph. (03) 37 7656.

FTDX401 with matching speaker, CW filter, VK2AAC, QTHR. Ph. (02) 521 7080.

Kenwood TS-520 AC/DC Transceiver, fitted CW filter and internal VFO-520, a very good rig by performance, complete with connecting cables, handbooks and spare set of tubes, \$575 or near offer. VK2BZF, QTHR. Ph. (043) 32 5758 any time.

Yaesu FT100B Transceiver, good condition, complete with helicals for 80, 40 and 20m, \$385; Circuit and parts for 200W linear, \$75. VK3AHG, QTHR. Ph. (03) 288 2024.

QM70 28/144 SSB Transverter, never used, \$100; Kyokuto 144 MHz Tcvr, FM with power supply and amplifier 25W with 2N5511, new, never been used, together with 29 el. yagi beam and ringo antenna, \$400; SSVT monitor and camera (two lenses), built on Robot boards, wants lining up, together with a heavy duty 22V-0 22— Power Supply together with all circuits etc. \$450 or will consider offer. VK4AGQ, QTHR. Ph. (03) 72401.

Novice Yaesu FT3B1S-PS31, new, owner must sell, 25W PEP output, sealed case, \$470. VK2AB, 3 Denman Rd., Travelling, Launceston, 7250. Ph. (03) 441 4172.

Estate late VK3NY: AR7 Rx with handbook, six coil boxes and sundry spare units, 600 QNO; Type 3 Mk 2 Trans/Rec, 80-40-20m, 25W CW, 10W AM, xtal cont, 250V AC, 6V DC, handbook, \$40 QNO; TU6B Tuning Unit, 3-4.5 MHz, two Var Cond (wide spread), 15-15 and 15-15 pF variable dial, ceramic switch, etc.; Type 'S' Power Supply; Indicator Unit; Type A1, incl. 'S' CRT; Class 'C' Wavemeter; two BC868A Units; BC442A Ant Relay Unit, meter, etc.; Handbook for AT3/AR8; Valies: 902 '1' CRT, RL185, 9001, 9002, 807s, etc.; xials: 1220, 226, 4100, 7025, 7155 kHz, two 455 kHz, two 455 MHz; Offers to VK3RN, QTHR. Ph. (03) 25 5315 A.H.

Coax Cable, 0.875 inch diameter, centiflex CU2V, has tubular copper inner, high density foam tube dielectric, solid ridged copper outer conductor with black plastic sheath; 32 per yard. R. Mudie VK2ZRG, Ph. (02) 663 2171, 8 am to 4 pm weekdays only.

Kenwood TR-7000G, 160W, 2m FM repeaters 1 to 8, Simplex 40, 50, 51, as new, \$180. VK2AMT, QTHR. Ph. (02) 451 4802.

Barlow Wadley Rx, slight fault, \$155 plus freight. D. Deerman, 222 Parry St., Charleville, 4470.

Tower 60ft, self-supporting triangular 8 ft. sides at bottom 4 ft. top, 2 sections, strongly constructed, \$60. VK3AXA, QTHR. Ph. (059) 42 7248.

SILENT KEYS

It is with deep regret that we record the passing of —

Mr. L. C. C. GALBRAITH VK2ABD

Johnson Matchbox Antenna Tuning Unit, very good condition, Midland SWR dual meters, also homemade dummy load, compact, heavy duty, lot \$100. Maurice Glover VK7MS, 17 Mona St., Battery Point, Tasmania 7000. Ph. (022) 34 3691.

Uniden 7020, matching speaker and remote VFO, first class condition, in original carton, \$775. VK3TG, QTHR. Ph. (058) 52 1636.

SSV Fast/Slow Digital Scan Converter, W6MXV design, full, half, quarter frame, video insert, and grey scale generator, \$200. Stan VK3BHZ, QTHR. Ph. (03) 870 5132, bus. (060) 71 6211.

Ken KP202, hand-held FM transceiver with NIDA, charger Chs. 40, 50, rpls. 2, 4, 8, 8 and stubby helical, good cond., \$145 QNO. Neil Osborne VK3VEI, QTHR. Ph. (03) 783 5207.

SSV WULMD Keyboard PCB, complete and working (CO Sept. '74), \$95; 17" picture tube, brand new, P7 phosphor (for SSV), \$25; Kenwood TR7200 2m FM, Ch. 40, 50, 61, V, R42, 44, 48, 500. VK3AHB (QTHR VK4MM), Ph. (03) 630 7248 bus.

Teletypes 158R, working order, \$55, with adjustment instruction, spare parts available; 240/110V Transformers 150VA, \$20. VK4AFB. Ph. (07) 356 1393.

Drake R-4-B RX, all xils, 1.8 to 30 MHz, plus HF broadcast, excellent condition, \$400. VK5RG, QTHR. Ph. (08) 276 4547.

Novice Revision Text, a text of 1000 revision choice questions with answers for the novice candidate covering theory and regulations. \$3.00. posted. D. Wilson VK3ZCA/NMW, 63 Superior Ave., Seven Hills, 2147.

WANTED

VOM Heathkit Model IM-25 with ohm, DC, DC zero cent, RMS AC scales, for associate member studying electronics. Details to A. A. Paton, Box 869, G.P.O., Albany, A.C.

IC60 6m FM Transceiver. Anybody knowing the whereabouts of such a transceiver belonging to Mike Goode VK3BDL, could contact him please on Ph. (09) 90 1805 after 6.30 p.m. any evening.

Uniden 8010, remote VFO, complete with connecting cable. Advise cond. and price. Terry VK2ALG, QTHR. Ph. (060) 21 3288 or (060) 25 3292 A.H.

Pensensor studying for ACPD needs Rx 240V commercially made unit covering HF amateur bands, plus preferred. Age no bar, but should have 870 and be in working order, to \$100. John Weir, 100 Wrigley St., Maroochrood, Qld. 4558. Ph. (071) 43 3023.

FT101B in good condition, reasonable price VK3AHG, QTHR. Ph. (03) 288 2024.

Radio Sets Nos. 19, 11, 31, 88, also require original accessories and power supplies, for collection. Please write or phone A. D. Johnson, 25 Verney Rd., Shepparton, 3600. Ph. (058) 21 2309 with particulars and anticipated costs.

FP200 Power Supply, cheap Triband beam. VK3AHB (QTHR VK4MM), Ph. (03) 630 7269 bus.

Xtal 1 (MHz) for BC221-AK freq meter, in good order. VK2BET, QTHR. Ph. (04) 476 2533.

Needles, unused HMV "Silent stylus" or "Columbia 90", to suit type 14 pick-up. VK2ZSV, QTHR.

TUITION

Morse Students. Morse cassette copying service now available. Send your C60 tape with two 8 cm cassettes (service fee) plus return postage. Specially speed 4, 5, 8, 8, 10, 12 wpm. F. Santos VK2ZOU YRS Types Officer, 8 Cooper St., Blacktown, 2148.

Novice Theory/Regs and/or Morse Course. The Hornsby and Districts Amateur Radio Club are running this for the prospective novice or the current Limited Licensee. For more details, contact Barry White VK2AAB, on Ph. (02) 487 1428 A.H.



YAESU and BAIL

the names you look for in advanced amateur communication equipment.

Would you buy a "Rolls" at your Supermarket?

... then why buy your first class radio equipment that way?

Bail Electronic Services have been the Australian factory representatives and specialists in Yaesu amateur communication equipment since 1963.

Our years of handling and specializing in this equipment have enabled us to build up a fund of knowledge and technical experience, backed by a comprehensive range of spare parts and service facilities. We don't just sell a set, our concern extends throughout the life of your equipment.

A selection of the top lines from Yaesu and Bail

FT-277R. Latest in VHF FM, just released 800 ch 2M band FT-277R with memory. Dig. readout, unique optical band change eliminates troublesome switch controls. \pm rpt facility, etc.



\$375.

The ever-popular FT-101E Transceiver: 160-10 Mx SSB AM CW PA two x 6JS6C 260W PEP input SSB Built-in Dual AC/DC power supply. BUILT-IN RF SPEECH PROCESSOR. Solid state except for Tx. PA and driver. IF noise blanker, FET RxF amplifier, clarifier, built-in speaker. Export Mod 240V AC 12V DC.



\$849.

FT7 — The all solid state FT7 20w, 12V mobile tcvr provides high performance on the 80-10m bands. Compact and lightweight, it supersedes the successful FT75B and includes built-in VFO, provision for CC operation, single knob tuning, NB, plus many more desirable features. Ideal for novice and O.T.

\$578.



FT901DM. the ham's dream, a deluxe 160-10m Tcvr with a host of new unusual features placing it far ahead of other sets. P.A. 2x6146B, Dig. and analogue readout, Freq. memory, electronic keyer, AC/DC operation, RF speech processor, variable I.F. band width, series circuitry to reduce spurious and harmonic emissions, etc!

\$1575



Contact us for details of other Yaesu equipment plus the accessories required to complete your station.

All equipment from Bail's carries a 90-day warranty and complete service back-up.

JAS 7778-35



ELECTRONIC SERVICES

**FRED BAIL VK3YS
JIM BAIL VK3ABA**

**60 Shannon St., Box Hill North,
Vic., 3129. Ph. (03) 89 2213**

Yaesu agents in Australia since 1963

Radio amateur equipment from B.E.S. also sold by —

W.A. Radio Communication Services, H. R. PRIDE, 26 Lockhart St., Como, 6152

WILLIS TRADING CO., 429 Murray Street, Perth 6000

S.A. FARMERS RADIO PTY. LTD., 20 Stanley St., Plympton 5038

TAS. G. T. ELECTRONICS, 131 Westbury Rd., South Launceston 7200

PRINS RADIO, 123 Argyle Street, Hobart 7000

N.S.W. Aviation Tooling, STEPHEN KUHIL, 104 Robey St., Mascot 2020

Amateur & Novice Comm. Supplies, W. E. BRODIE, 23 Dalrymple Street, Seven Hills 2147

DIGITRONICS, 186 Parry St., Newcastle West 2302

RIVERCOM, Sid Ward, 9 Copland St., Wagga Wagga 2650

QLD. H. C. BARLOW, 92 Charles St., Aitkenville, Townsville 4814

MITCHELL RADIO CO., 59 Albion Rd., Albion 4010

A.C.T. QUICKTRONIC, Jim Bland, Shop 11, Altref Crt., Phillip 2606

Ph. 450 4379

Ph. 21 7609

Ph. 293 2155

Ph. 44 4773

Ph. 34 6912

Ph. 667 1650

Ph. 624 2691

Ph. 69 2040

Ph. 21 2125

Ph. 79 8179

Ph. 57 6830

Ph. 81 2824

82 2864



Big news from BAIL in VHF and UHF Transceivers . . .



FT-221R 2M All Mode Transceiver.

Here is a compact, versatile transceiver designed for the active 2 meter enthusiast. The FT-221R features all mode operation — SSB/FM/CW/AM — with repeater offset capability. Advanced phase lock loop circuitry offers unsurpassed stability and clean spurious-free signals. Modular, computer-type construction offers reliability and ease of service. Pre-set pass band tuning provides the optimum selectivity and performance needed on today's active 2 meter band. Join the fun on FM, DX, or OSCAR, with the FT-221R transceiver. Another winner from the world's leader in amateur communications equipment. **\$659 (\$749 with Dig. Readout Adaptor, a few only available).**

FT-277R. Latest in VHF FM, just released — 800 ch 2M band FT-277R with memory, Dig. readout, unique optical band change eliminates troublesome switch controls. + rpt facility, etc. **\$375.**



SPECIAL



FT-223 2M F.M. Transceiver.

10W 23 channels, plus one "priority" channel. Inc. mic., 12 V power cable, desk stand, mobile mounting bracket and crystals for channels 40, 50 and 51 installed. Limited quantity at never-to-be-repeated price of **\$159 each. A real bargain!**

FT-620B 6M Mobile/Base Station Transceiver.

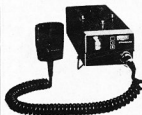
10W solid state, AC-DC operation. The Ft-620B lets you join the action in DX on 6M. Don't miss these SSB, AM CW sets at \$399 while shipment lasts.



MODEL SR-C430, 10W, 12 channel plus memory channel, Mobile FM 12V DC Transceiver for 420-450 MHz Amateur Band use. A superb compact unit. Complete with microphone, built-in speaker, snap-clip mobile mount, power cable, DC line filter, stand for base station use. Including one channel. Price **\$342.**

SR-C146A, 2m FM 2W output, 5 chan. hand-held transceiver. This superior quality transceiver comes complete with a leather carrying case, and auxiliary jacks are provided for optional external microphone, earphone, antenna and battery charger. Includes built-in mic. and speaker. Whip antenna telescopes down level with top of set. Price **\$248 incl. 3 channels.**

SR-C432, 2.2W, 6 channel hand-held FM transceiver, with short helical flexible antenna, leather case and one channel installed. Superior construction and performance. Jacks provided for external mic., earphone, antenna, and battery charger. Includes built-in mic. and speaker. **\$285.**



All prices include sales tax. Freight is extra. Prices and specifications subject to change without notice. Allow 50% per \$100 for insurance when freight required.

Write for brochures containing comprehensive data on this equipment. **Bail — quality equipment and sound service backup.**

JAS 7778-36



**ELECTRONIC
SERVICES**

**FRED BAIL VK3YS
JIM BAIL VK3ABA**

**60 Shannon St., Box Hill North,
Vic., 3129. Ph. (03) 89 2213**

Yaesu agents in Australia since 1963

Radio amateur equipment from B.E.S. also sold by —

W.A.	Radio Communication Services, H. R. PRIDE, 26 Lockhart St., Como, 6152	Ph. 450 4379
	WILLIS TRADING CO., 429 Murray Street, Perth 6000	Ph. 21 7609
S.A.	FARMERS RADIO PTY. LTD., 20 Stanley St., Plympton 5038	Ph. 293 2155
TAS.	G. T. ELECTRONICS, 131 Westbury Rd., South Launceston 7200	Ph. 44 4773
	PRINS RADIO, 123 Argyle Street, Hobart 7000	Ph. 34 6912
N.S.W.	Aviation Tooling, STEPHEN KUHLE, 104 Robey St., Mascot 2020	Ph. 667 1650
	Amateur & Novice Comm. Supplies, W. E. BRODIE, 23 Dalry Street, Seven Hills 2147	Ph. 624 2691
	DIGITRONICS, 166 Parry St., Newcastle West 2302	Ph. 69 2040
	RIVERCOM, Sid Ward, 9 Copland St., Wagga Wagga 2650	Ph. 21 2125
QLD.	H. C. BARLOW, 92 Charles St., Aitkenvale, Townsville 4814	Ph. 79 8179
	MITCHELL RADIO CO., 59 Albion Rd., Albion 4010	Ph. 57 6830
A.C.T.	QUICKTRONIC, Jim Bland, Shop 11, Altrec Crt., Phillip 2606	Ph. 81 2824
		82 2864